ST-EX880/MS717

SERVICE MANUAL

AEP Model
UK Model
ST-EX880
E Model
Tourist Model
ST-MS717

ST-EX880/MS717 are the tuner section in DHC-EX880MD/MD717.

Photo: ST-MS717

SPECIFICATIONS

FM stereo, FM / AM superheterodyne tuner

FM tuner section

Tuning range	
ST-EX880:	87.5 – 108.0 MHz (50 kHz step)
ST-MS717:	
Tourist model:	76.0 – 108.0 MHz (50 kHz step)
Other models:	87.5 – 108.0 MHz (50 kHz step)
Antenna	FM lead antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	
ST-EX880:	
MW:	522 – 1,611 kHz (with the interval set at 9 kHz)
LW:	144 – 288 kHz (with the interval set at 3 kHz)
ST-MS717:	
AM:	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
Antenna	AM loop antenna, outdoor antenna terminals
Intermediate frequency	450 kHz
Dimensions (w/h/d) incl. projecting parts and controls:	Approx. 280 x 90 x 295 mm
Mass	Approx. 2.0 kg

Design and specifications are subject to change without notice.

FM STEREO/FM-AM TIMER TUNER

MICROFILM

SONY®

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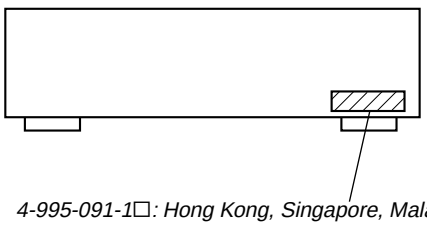
MODEL IDENTIFICATION
– Back Panel –



4-995-091-1□: Hong Kong, Singapore, Malaysia
4-995-091-2□: AEP, UK
4-995-091-3□: Tourist

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
SERVICING NOTES

KEYs FLUORESCENT INDICATOR TUBE/LEDs CHECK MODE (Work a separately)

1. Press [POWER] button.
2. Press two buttons [POWER] and [SLEEP] simultaneously.
3. LEDs are all turned on, the fluorescent indicator tube displays "KEY/FL/LED", and the check mode is set.
   ① All LED indicators light on mode
   ↓
   ② All Fluorescent indicator tube light on mode
   ↓
   ③ ST segment mode
   ↓
   ④ RDS segment mode
   ↓
   ⑤ Encoder and key check mode

Note:

1) All LED light on mode is kept, when buttons which is pressed to enter all LED light on mode, release same time.
   When release them separate timing, it is moved to next All Fluorescent indicator tube light on mode.

2) After all LED light on mode, light on point remove one by one, when any button pressed or [MULTI CONTROLLER] knob turned.

3) Under KEY check mode, every time buttons pressed numerical value of "KEY=" in FL tube increase.
   And that time, numerical value of "ECDR=" increase when [MULTI CONTROLLER] button turn to + direction, and it decrease turn to – direction.

To exit from this mode, disconnect the power cord.

TUNER CHECK MODE (Work a separately)

1. Press [POWER] button.
2. Press two buttons [POWER] and [ENTER/YES] simultaneously, and the tuner check mode is set.
3. System power on, set up the tuner function, and test condition inactive.
   Press two buttons [POWER] and [ENTER/YES] simultaneously to exit, and system power off.

COLD RESET (Work a complex)

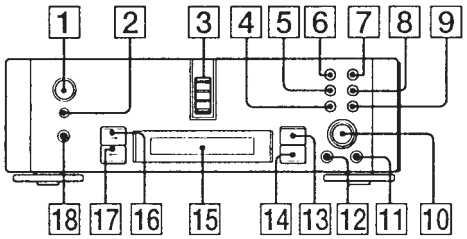
The cold reset clears each unit microcomputer memory to initial conditions.

1. Press [POWER] button to turn the set OFF.
2. Press three buttons [MENU/NO], [PRESET], and [POWER] simultaneously.
3. A message "COLD SET OK" is displayed on the fluorescent indicator tube two seconds.
4. Press [POWER] button to turn the set OFF.
5. Remove power cord after the clock is displayed on the fluorescent indicator tube.
6. Connect power cord, press [POWER] button to turn the set ON, and the set is reset.

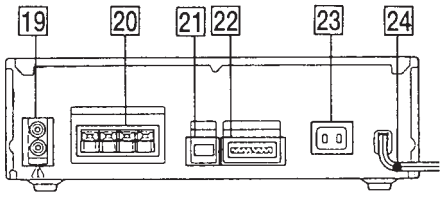
SECTION 2
GENERAL

LOCATION OF CONTROLS

– Front Panel –



– Rear Panel –

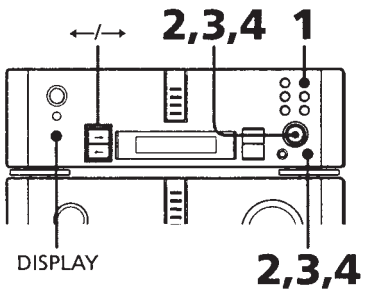


1 I/⏻ (POWER) button
2 REMOTE CONTROL receiver
3 ONCE, DAILY, REC, SLEEP indicator
4 REC button
5 DAILY button
6 ONCE button
7 CLOCK/TIMER SET button
8 STEREO/MONO button
9 SLEEP button
10 MULTI CONTROLLER knob
11 ENTER/YES button
12 MENU/NO button
13 BAND button
14 RESET button
15 Fluorescent indicator tube
16 AUTO/⟶ button
17 MANUAL/⟵ button
18 DISPLAY button

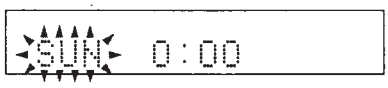
19 TUNER OUT terminal
20 FM/AM ANTENNA terminal
21 AU BUS terminal
22 SYSTEM CONTROL terminal
23 AC OUTLET (for TA-MS717)
24 POWER cord

Step 2: Setting the time

You can set the time while the system is off. You must set the time beforehand to use the timer-recording and other timer functions. The clock is on a 24-hour system for the DHC-EX880MD, and a 12-hour system for DHC-MD717.
The DHC-EX880MD is used for illustration purpose.



1 Press CLOCK/TIMER SET.
The day indication ("SUN") flashes.



2 Turn MULTI CONTROLLER and set the day, then press ENTER/YES.
The hour indication flashes.

3 Turn MULTI CONTROLLER and set the hour, then press ENTER/YES.
The minute indication flashes.

4 Turn MULTI CONTROLLER and set the minute, then press ENTER/YES.
The clock starts working.

If you made a mistake

Press ← or → until the indication you wish to change (day, hour, minute) flashes, then change the setting.

To change the preset time

You can also set and change the time while the system is on.

1 Press CLOCK/TIMER SET.
2 Turn MULTI CONTROLLER until "CLOCK" appears.
3 Press ENTER/YES.
4 Perform steps 2 to 4 of "Setting the time".

If the system is off, start over from step 1 of "Setting the time".

To show the time

The built-in clock constantly shows the time in the tuner display while the system is off. To show the time while the system is on, press DISPLAY. Each time you press the button, the display changes as follows:

Normal display ⟷ Clock display*

* The clock display returns to the normal display after about eight seconds. The time cannot be displayed constantly while the system is on.

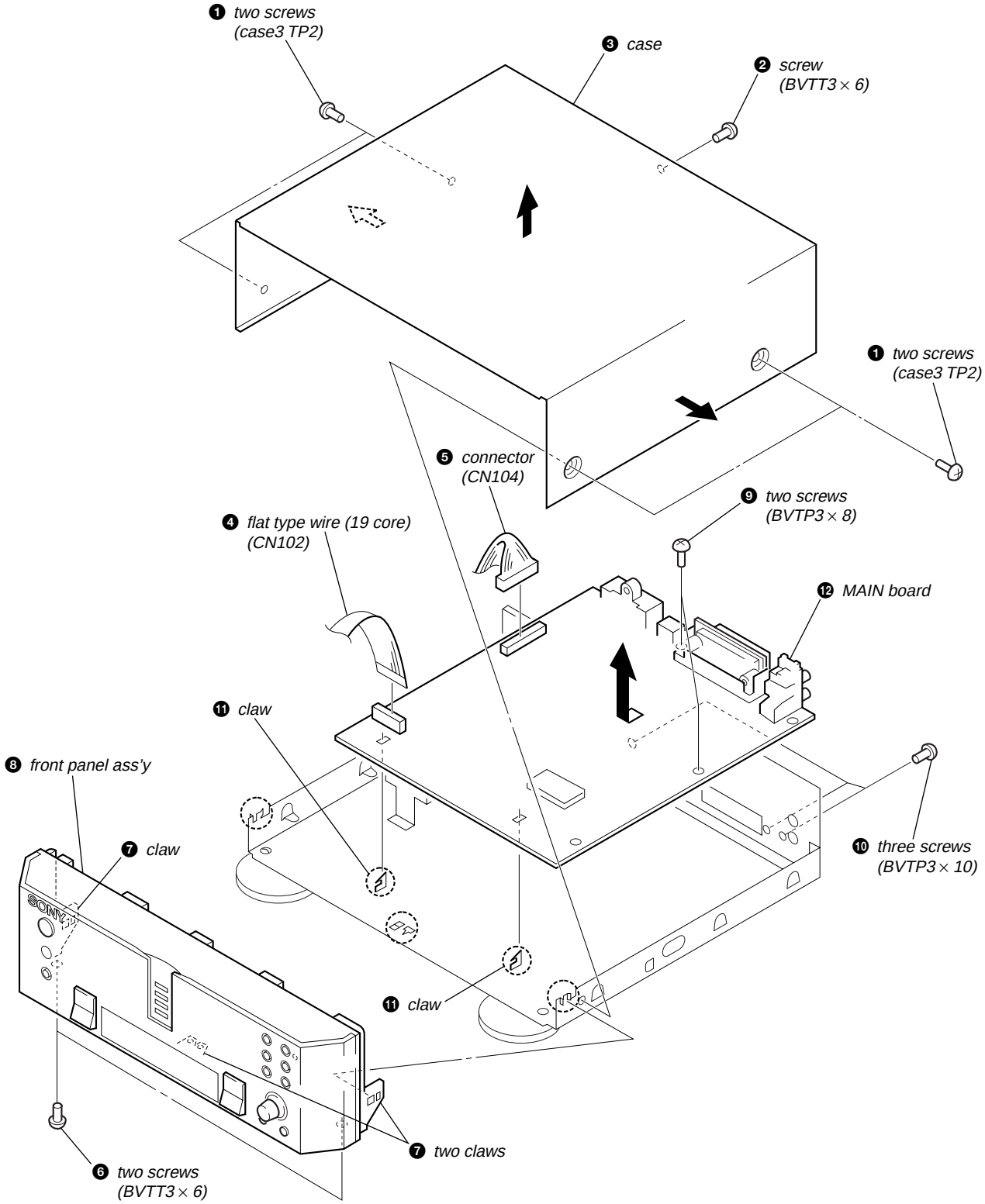
Tip

The upper dot flashes for the first half of a minute (0 to 29 seconds), and the lower dot flashes for the last half of a minute (30 to 59 seconds).

SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

MAIN BOARD


❶ two screws (case3 TP2)
❸ case
❷ screw (BVTT3 × 6)
❶ two screws (case3 TP2)
❺ connector (CN104)
❾ two screws (BVTP3 × 8)
❹ flat type wire (19 core) (CN102)
⓬ MAIN board
⓫ claw
❽ front panel ass'y
❼ claw
⓫ claw
⓾ three screws (BVTP3 × 10)
❼ two claws
❻ two screws (BVTT3 × 6)

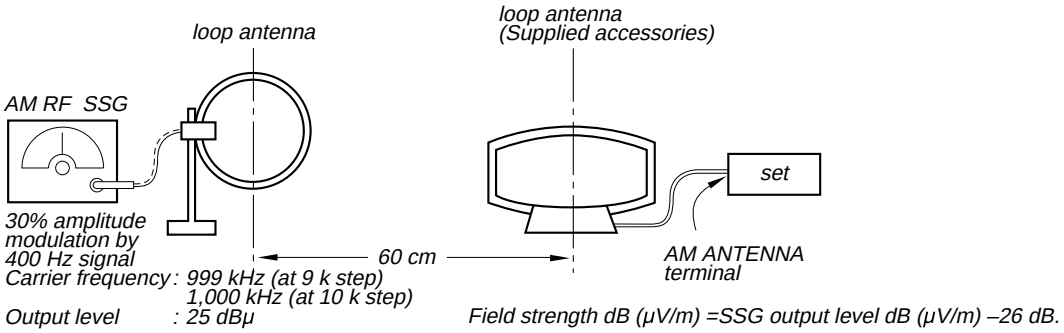
SECTION 4
ELECTRICAL ADJUSTMENTS

0 dB=1 µV

Note: As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

AM Section Adjustment

Setting:



Field strength dB (µV/m) =SSG output level dB (µV/m) –26 dB.

AM Tuned Level Adjustment

Band: AM or MW

Procedure:

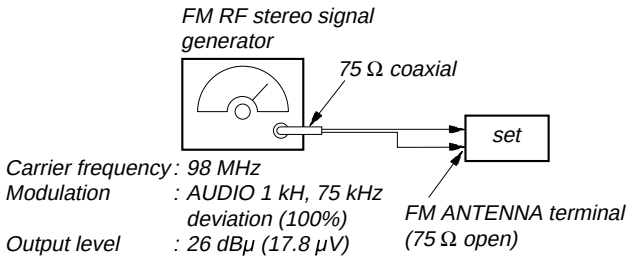
1. Set the output of SSG so that the input level of the set becomes 55 dBµ/m.
2. Tune the set to 999 kHz or 1,000 kHz.
3. Adjust RV1 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location : MAIN board

FM Section Adjustment

Note: This adjustment should be performed after the AM Tuned Level Adjustment due to the same adjustment element.

Setting:



FM Tuned Level Adjustment

Band: FM

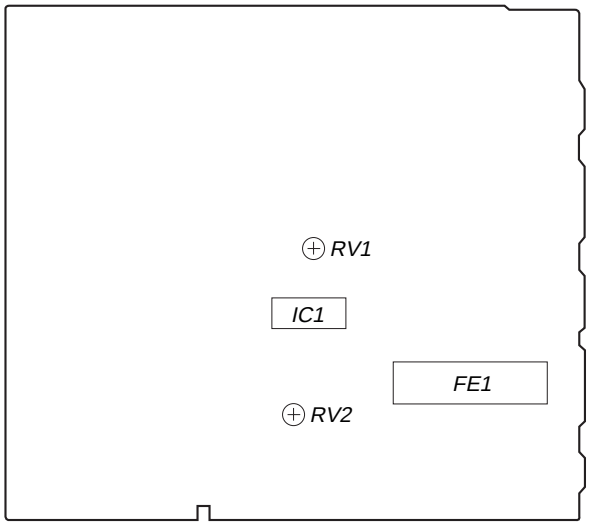
Procedure:

1. Supply a 26 dBµ 98 MHz signal from the ANTENNA terminal.
2. Tune the set to 98 MHz.
3. If the TUNED indicator does not light, adjust RV2 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location: MAIN board

Adjustment Location:

[MAIN BOARD] (Component Side)



SECTION 5
DIAGRAMS

5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Schematic Diagram:

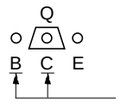
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- B+ : B+ Line.
- B− : B– Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM (MW)
  〈〈 〉〉 : STAND BY
  [ ] : MUTING ON
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM (MW)

Note on Printed Wiring Boards:

- o——o : parts extracted from the component side.
- △ : internal component.
- Indication of transistor.

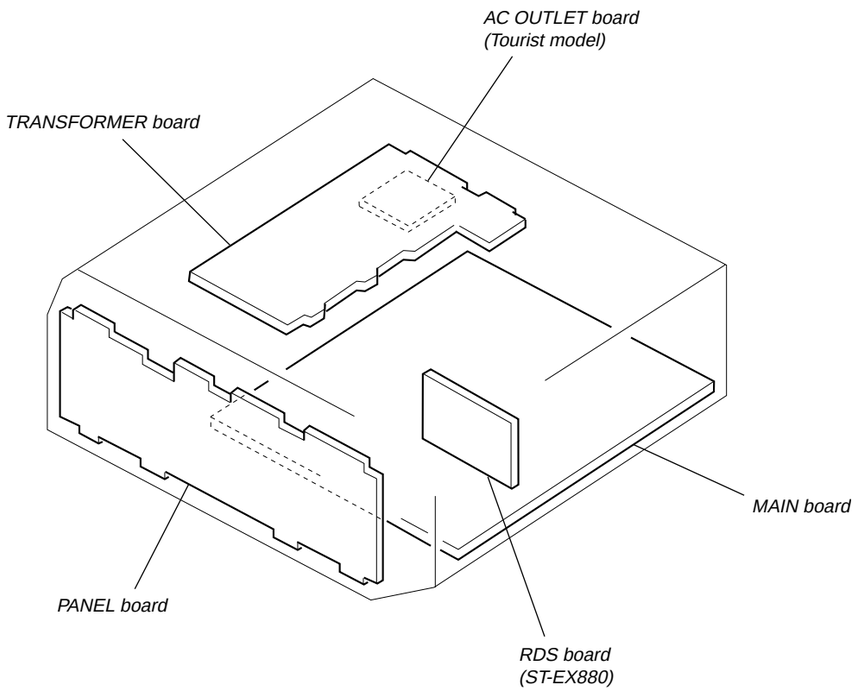


These are omitted.

Abbreviation:

HK : Hong Kong
JE : Tourist
MY : Malaysia
SP : Singapore

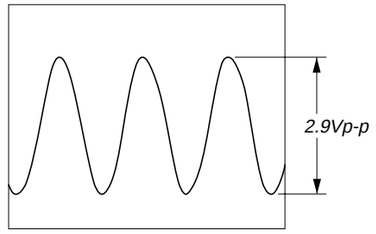
• Circuit Boards Location



• Waveforms

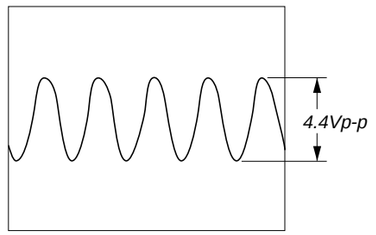
– MAIN Section –

❶ IC51 ① (XIN)



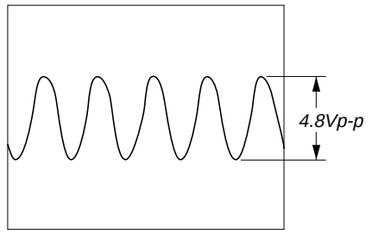
4.5 MHz

❷ IC201 ㊶ (X2)



10 MHz

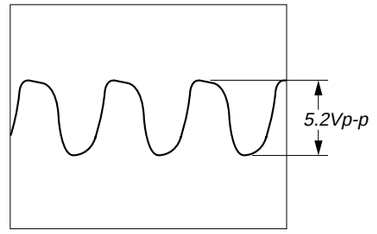
❸ IC201 ㊹ (XT2)



32.768 kHz

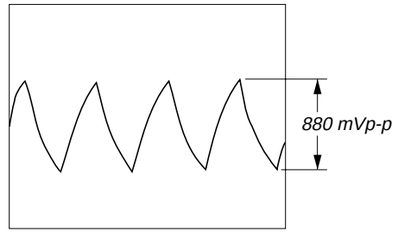
– PANEL Section –

❹ IC901 ⑳ (XOUT)



513 kHz

❺ IC901 ㉑ (XIN)



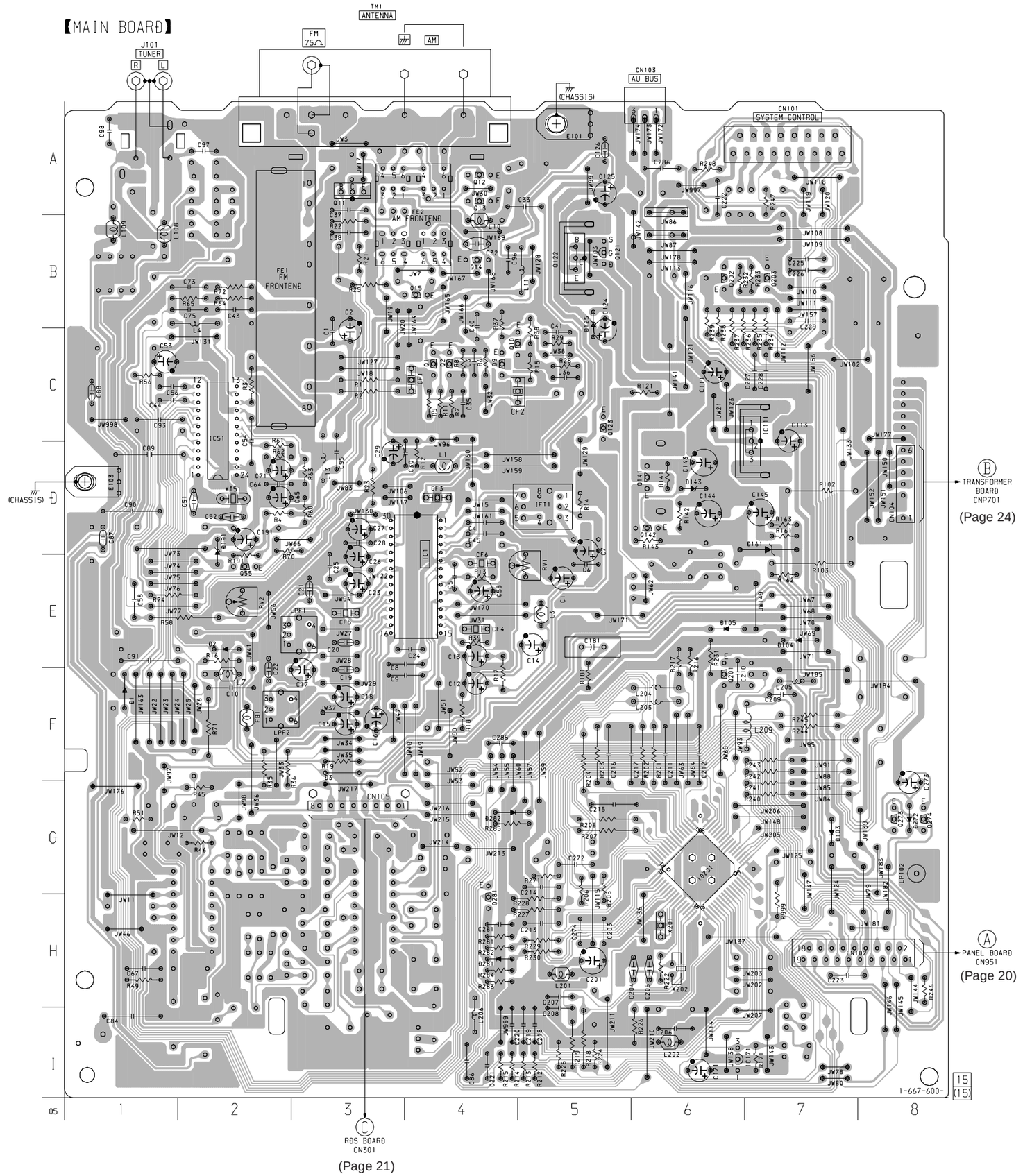
504 kHz

5-2. PRINTED WIRING BOARD – MAIN Section – (ST-EX880)

• See page 7 for Circuit Boards Location.

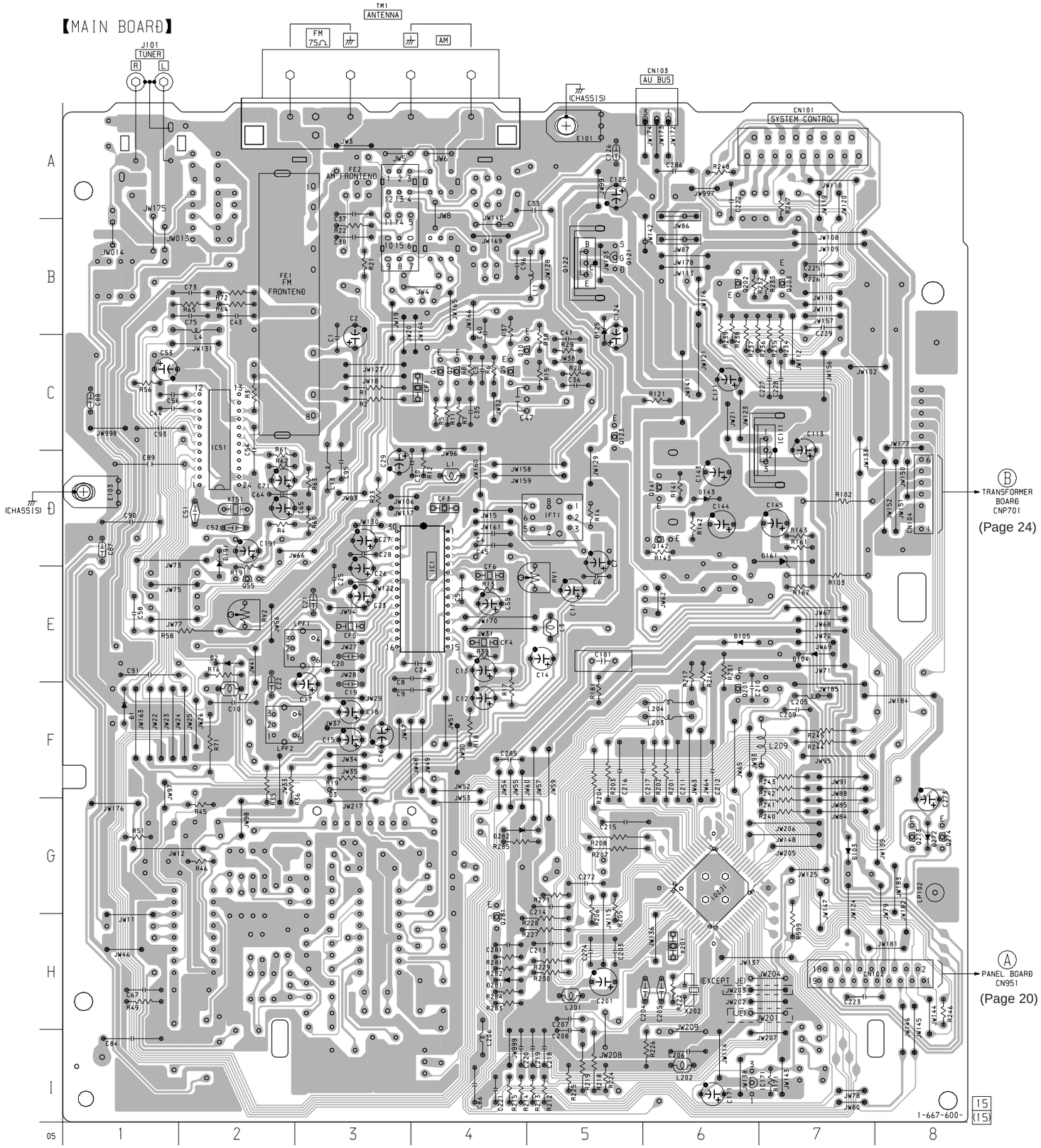
• **Semiconductor Location**

Ref. No.	Location
D1	F-1
D2	E-2
D103	G-7
D104	E-7
D105	E-6
D125	B-5
D143	D-6
D161	D-7
D191	D-2
D272	G-8
D281	H-4
D282	G-4
IC1	E-4
IC51	C-2
IC111	C-7
IC171	I-6
IC201	G-6
Q1	C-4
Q2	C-4
Q9	C-4
Q10	C-5
Q11	A-3
Q12	A-4
Q13	A-4
Q14	B-4
Q15	B-4
Q55	E-2
Q121	B-5
Q122	B-5
Q123	C-5
Q141	D-6
Q142	D-6
Q201	F-6
Q202	B-6
Q203	B-7
Q273	G-8
Q274	G-8
Q281	H-4



5-3. PRINTED WIRING BOARD – MAIN Section – (ST-MS717)

• See page 7 for Circuit Boards Location.

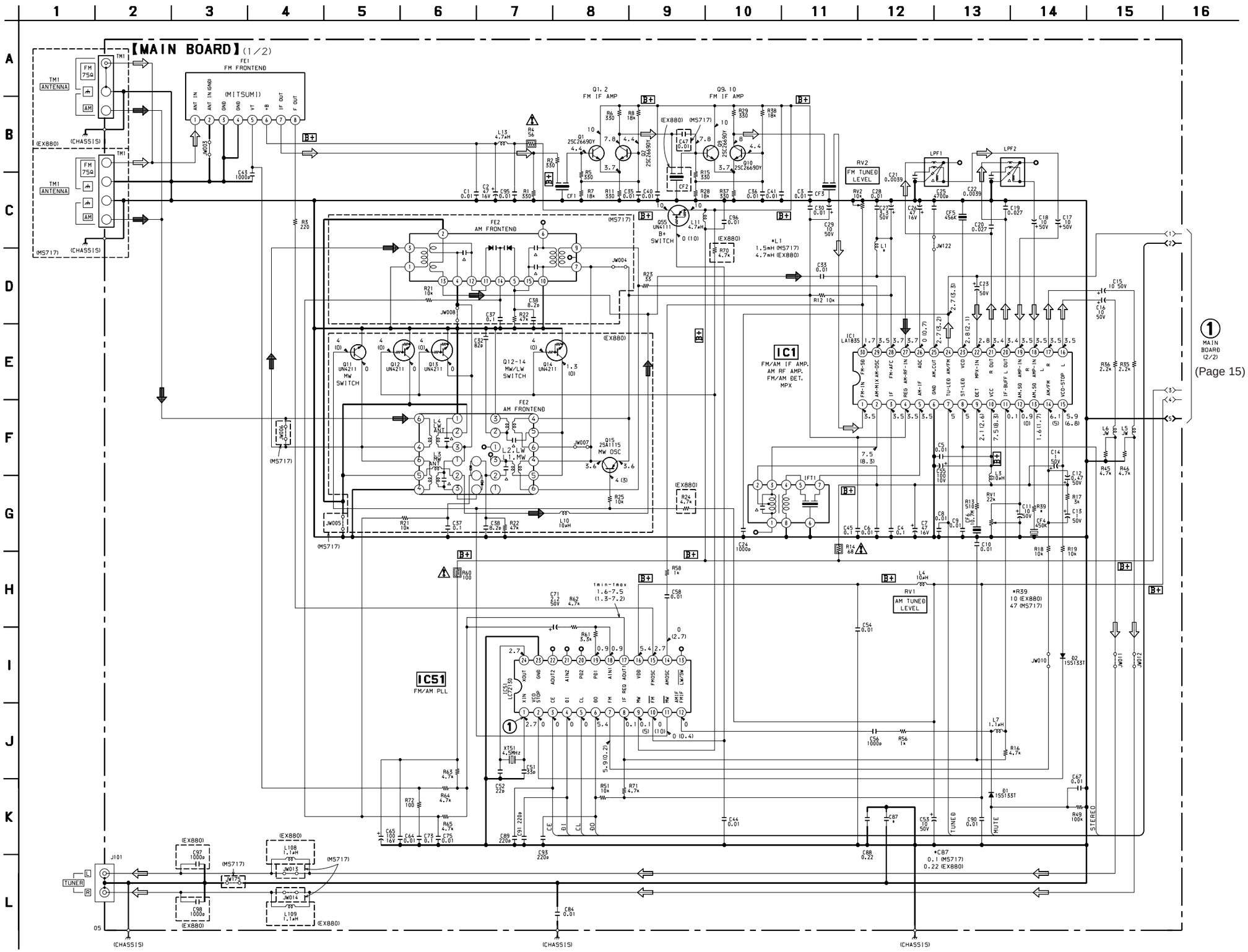


- **Semiconductor Location**

Ref. No.	Location
D1	F-1
D2	E-2
D103	G-7
D104	E-7
D105	E-6
D125	B-5
D143	D-6
D161	D-7
D191	D-2
D272	G-8
D281	H-4
D282	G-4
IC1	E-4
IC51	C-2
IC111	C-7
IC171	I-6
IC201	G-6
Q1	C-4
Q2	C-4
Q9	C-4
Q10	C-5
Q55	E-2
Q121	B-5
Q122	B-5
Q123	C-5
Q141	D-6
Q142	D-6
Q201	F-6
Q202	B-6
Q203	B-7
Q273	G-8
Q274	G-8
Q281	H-4

5-4. SCHEMATIC DIAGRAM – MAIN Section (1/2) –

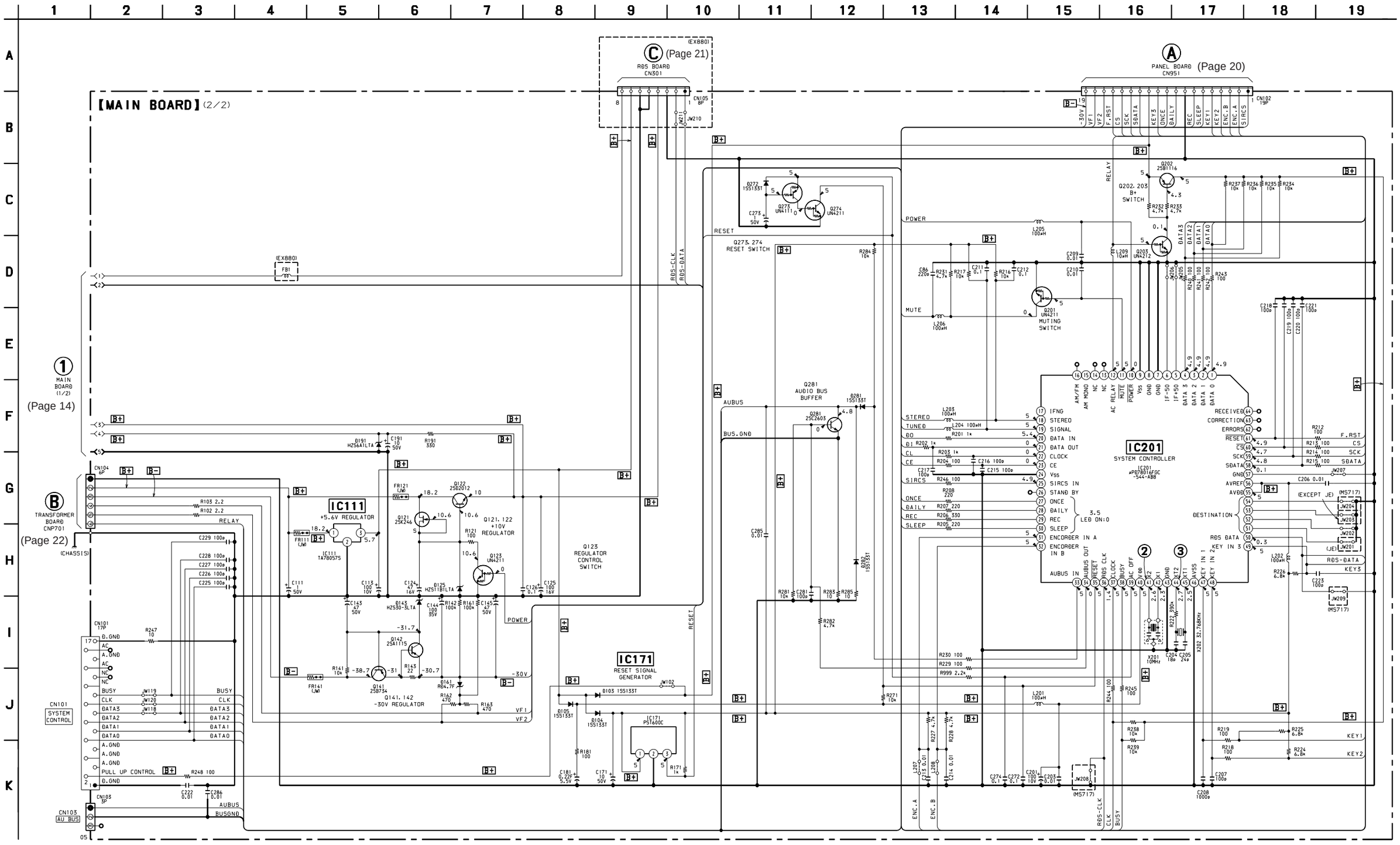
• See page 8 for Waveforms.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-5. SCHEMATIC DIAGRAM – MAIN Section (2/2) –

• See page 8 for Waveforms.

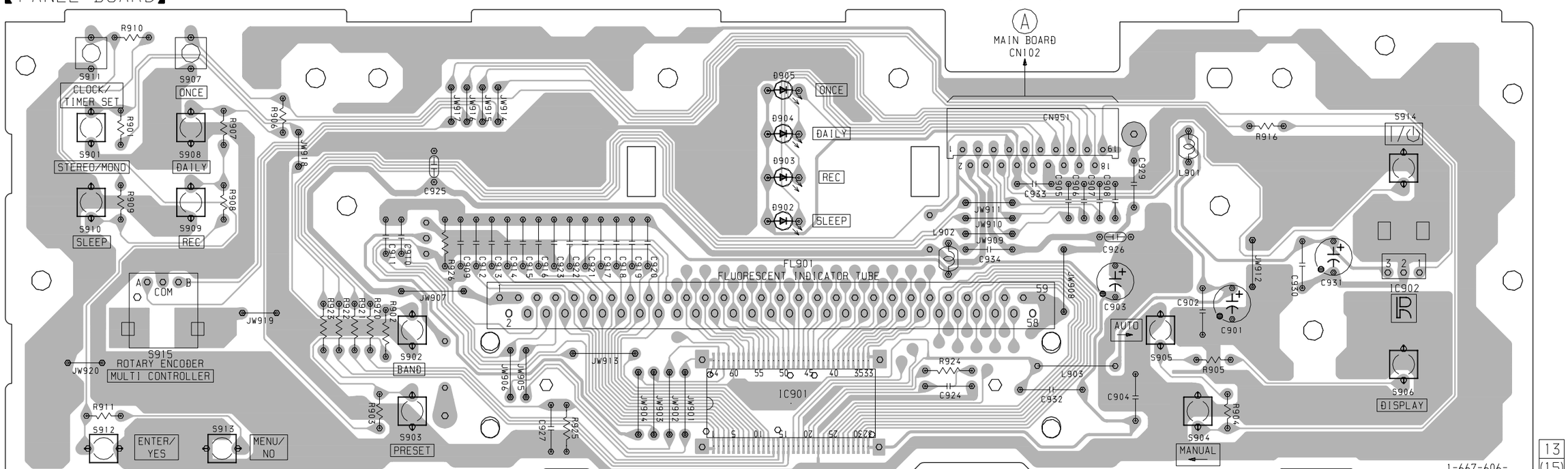


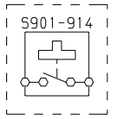
5-6. PRINTED WIRING BOARD – PANEL Section –

• See page 7 for Circuit Boards Location.

【PANEL BOARD】

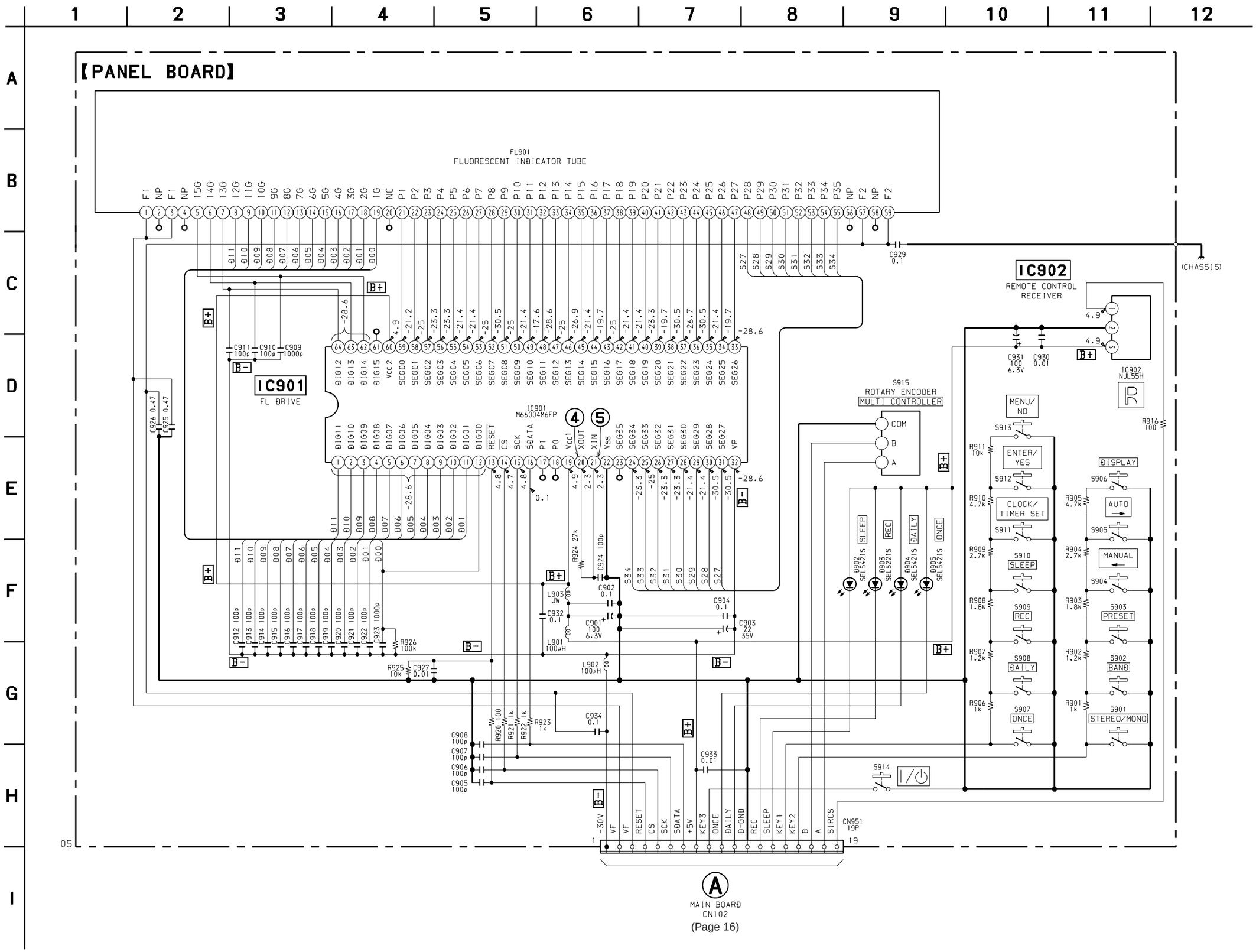
(Page 10, 12)



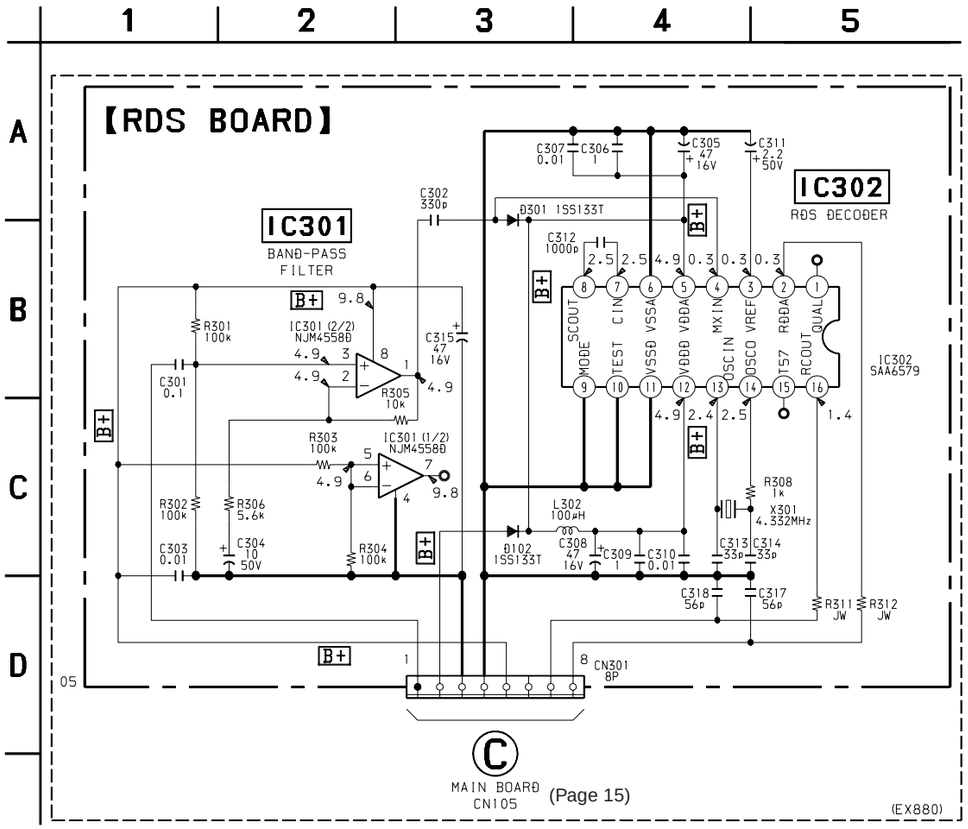


5-7. SCHEMATIC DIAGRAM – PANEL Section –

• See page 8 for Waveforms.

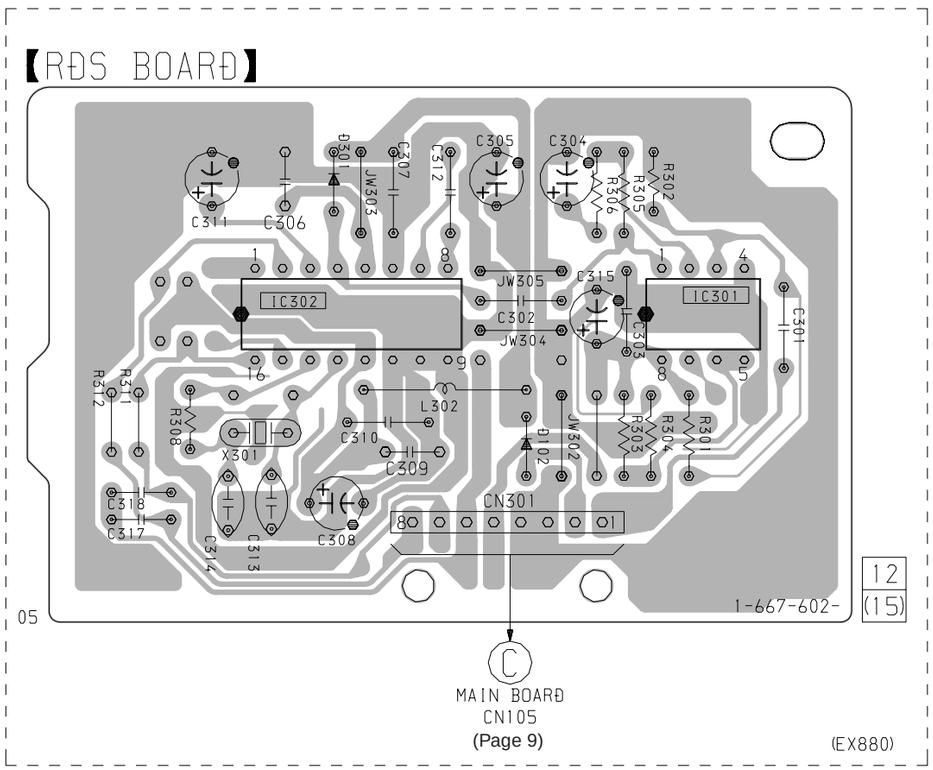


5-8. SCHEMATIC DIAGRAM – RDS Section – (ST-EX880)

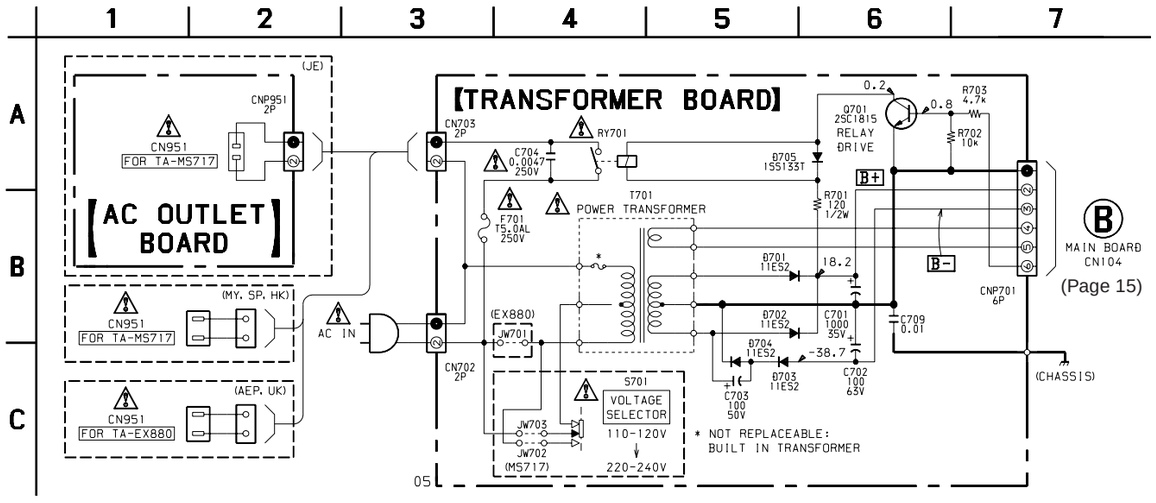


5-9. PRINTED WIRING BOARD – RDS Section – (ST-EX880)

• See page 7 for Circuit Boards Location.



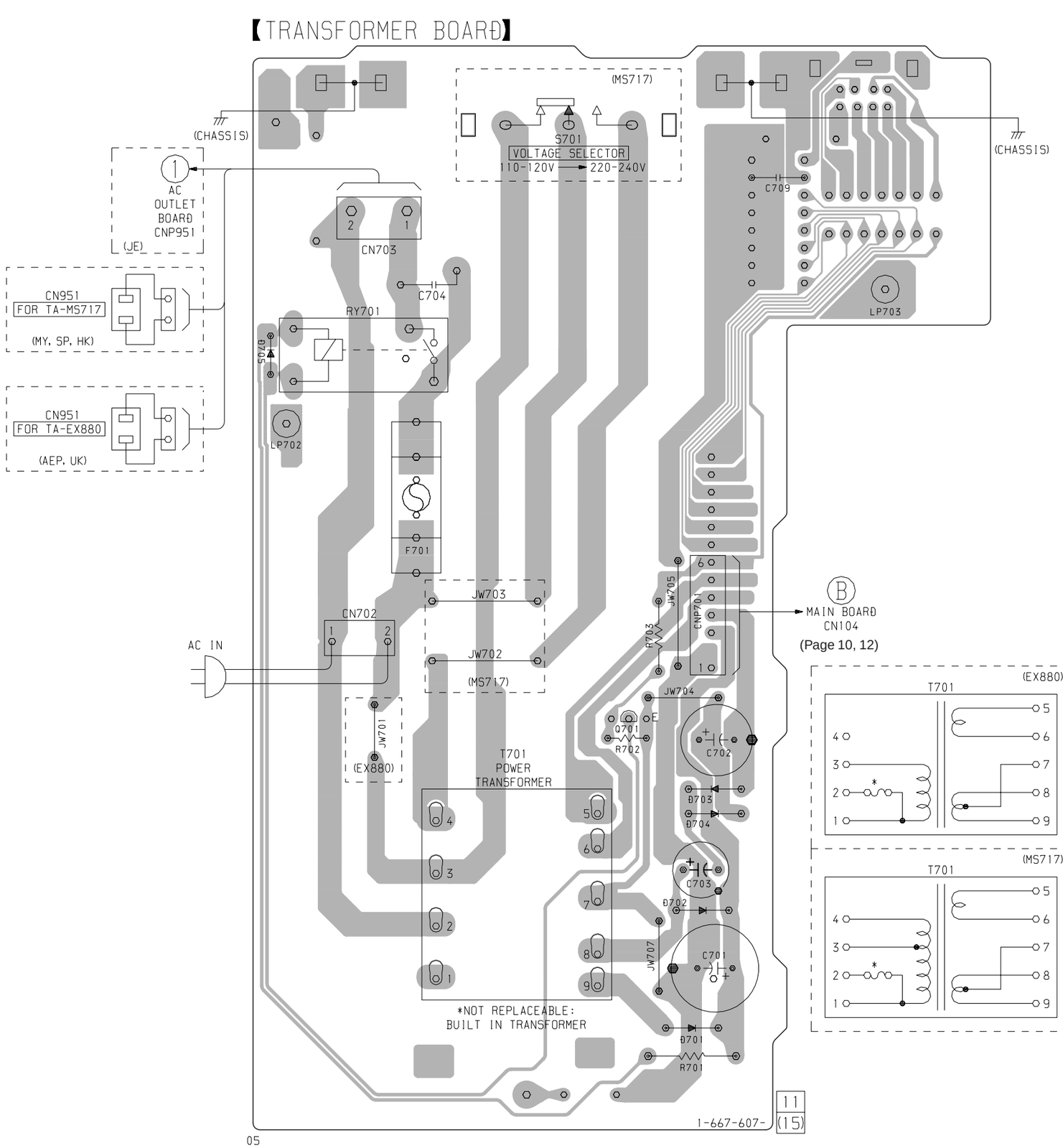
5-10. SCHEMATIC DIAGRAM – POWER Section –



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-11. PRINTED WIRING BOARDS – POWER Section –

• See page 7 for Circuit Boards Location.



5-12. IC PIN FUNCTION DESCRIPTION

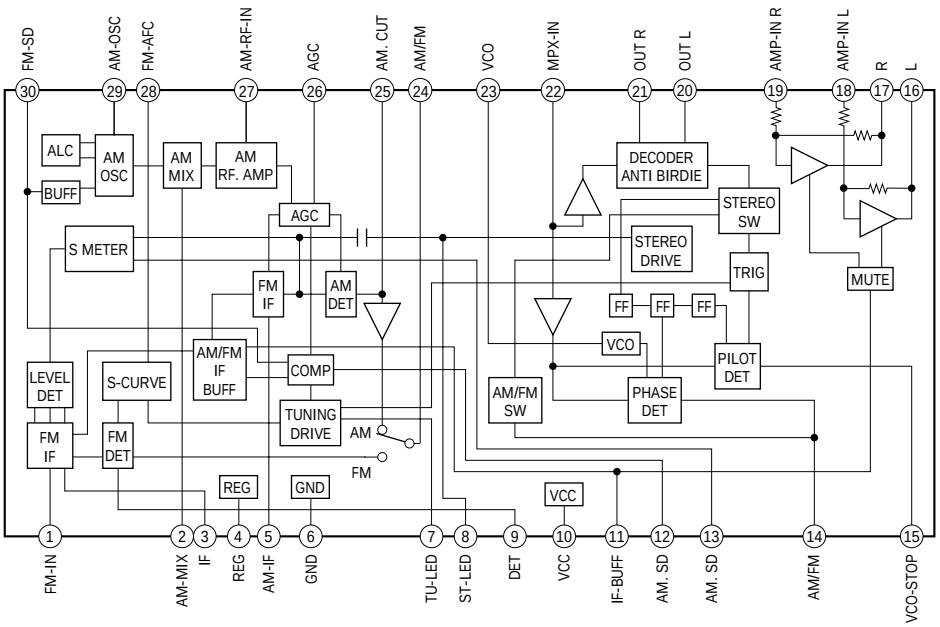
• MAIN BOARD IC201 μPD78016FGC-544-AB8 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 4	DATA 0 to DATA 3	I/O	Two-way data bus with the system control bus
5	IF+50	I	Fixed at “L” in this set
6	IF–50	O	Fixed at “L” in this set
7, 8	GND	—	Ground terminal
9	VSS	—	Ground terminal
10	$\overline{\text{POWER}}$	O	Power on/off control signal output for the +10V and +5V power supply “L”: power on, “H”: standby
11	$\overline{\text{MUTE}}$	O	Tuner muting on/off control signal output terminal “L”: muting on
12	AC RELAY	O	Relay drive signal output for the AC on/off control “L”: standby, “H”: power on
13, 14	NC	O	Not used (open)
15	AM MONO	O	AM forced monaural control signal output terminal “H”: forced monaural Not used (open)
16	AM/FM	O	FM/AM selection signal output terminal Not used (open)
17	IFNG	O	Intermediate frequency count effect signal output terminal “L”: NG, “H”: OK Not used (open)
18	STEREO	I	Stereo detection signal input from the LA1835 (IC1) “L”: stereo
19	SIGNAL	I	FM/AM frequency detection signal input from the LA1835 (IC1) “L”: tuned, “H”: detuned
20	DATA IN	I	PLL serial data input from the FM/AM PLL (IC51)
21	DATA OUT	O	PLL serial data output to the FM/AM PLL (IC51)
22	CLOCK	O	PLL serial data transfer clock signal output to the FM/AM PLL (IC51)
23	CE	O	PLL serial chip enable signal output to the FM/AM PLL (IC51)
24	VSS	—	Ground terminal
25	SIRCS IN	I	Sircs remote control signal input from the remote control receiver (IC902)
26	STAND BY	O	LED drive signal output for the STANDBY indicator Not used (open)
27	ONCE	O	LED drive signal output for the ONCE indicator (D905) “L”: LED on
28	DAILY	O	LED drive signal output for the DAILY indicator (D904) “L”: LED on
29	REC	O	LED drive signal output for the REC indicator (D903) “L”: LED on
30	SLEEP	O	LED drive signal output for the SLEEP indicator (D902) “L”: LED on
31	ENCORDER IN A	I	Jog dial pulse (A) input from the rotary encoder (S915) (for MULTI CONTROLLER)
32	ENCORDER IN B	I	Jog dial pulse (B) input from the rotary encoder (S915) (for MULTI CONTROLLER)
33	AUBUS IN	I	Sircs remote control signal input for the audio bus
34	AUBUS OUT	O	Sircs remote control signal output for the audio bus
35	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator circuit “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
36	RDS CLK	I	Serial data transfer clock signal input from the RDS decoder (IC302) Used for the ST-EX880 (ST-MS717: fixed at “L”)
37	CLOCK	I/O	Bus data transfer/reading clock signal in/out terminal for the system control bus
38	BUSY	I/O	Busy signal in/out terminal for the system control bus
39	AC OFF	I	AC off detection signal input terminal “L”: AC off
40	VDD	—	Power supply terminal (+5V)
41	X2	O	Main system clock output terminal (10 MHz)
42	X1	I	Main system clock input terminal (10 MHz)
43	GND IC (VPP)	—	Ground terminal
44	XT2	O	Sub system clock output terminal (32.768 kHz)
45	XT1	I	Sub system clock input terminal (32.768 kHz)
46	AVSS	—	Ground terminal (for A/D converter)

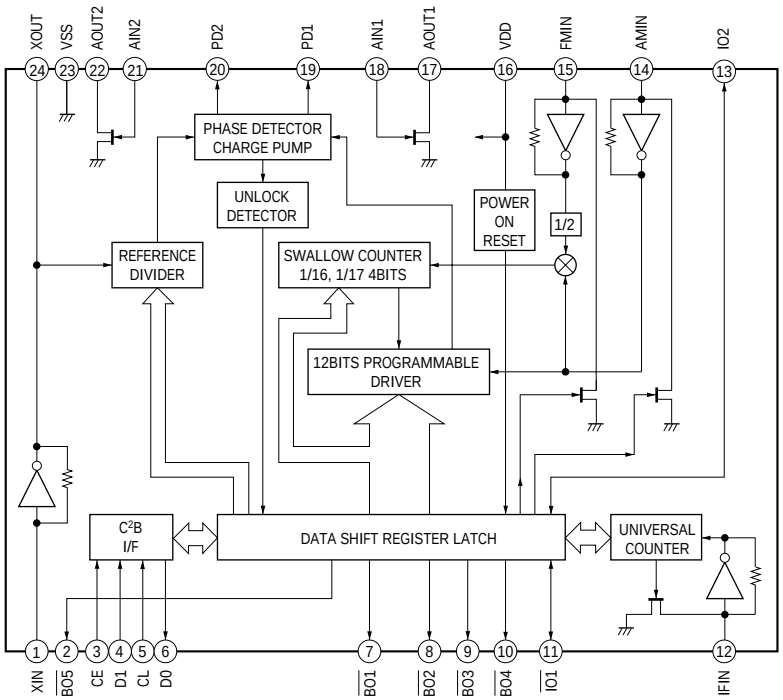
Pin No.	Pin Name	I/O	Function
47	KEY IN 1	I	Key input terminal (A/D input) (S907 to S913) ONCE, DAILY, REC, SLEEP, CLOCK/TIMER SET, ENTER/YES, MENU/NO keys input
48	KEY IN 2	I	Key input terminal (A/D input) (S901 to S906) STEREO/MONO, BAND, PRESET, MANUAL, AUTO, DISPLAY keys input
49	KEY IN 3	I	Key input terminal (A/D input) (S914) I/⏻ (power) key input
50	RDS DATA	I	Serial data input from the RDS decoder (IC302) Used for the ST-EX880 (ST-MS717: fixed at “L”)
51	DESTINATION	I	Input terminal for the destination setting (Tourist model: fixed at “L”, Except Tourist model: open)
52	DESTINATION	I	Input terminal for the destination setting (fixed at “L”)
53	DESTINATION	I	Input terminal for the destination setting (Tourist model: open, Except Tourist model: fixed at “L”)
54	DESTINATION	I	Input terminal for the destination setting (ST-EX880: open, ST-MS717: fixed at “L”)
55	AVDD	—	Power supply terminal (+5V) (for A/D converter)
56	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
57	GND	—	Ground terminal
58	SDATA	O	Serial data output to the fluorescent indicator tube driver (IC901)
59	SCK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver (IC901)
60	$\overline{\text{CS}}$	O	Chip select signal output to the fluorescent indicator tube driver (IC901) “L” active
61	$\overline{\text{RESET}}$	O	Reset signal output to the fluorescent indicator tube driver (IC901) “L”: reset
62	ERRORS	O	Output terminal of the error monitor Not used (open)
63	CORRECTION	O	Output terminal of the correction monitor Not used (open)
64	RECEIVED	O	Output terminal of the receive monitor Not used (open)

• IC Block Diagrams
– MAIN Board –

IC1 LA1835

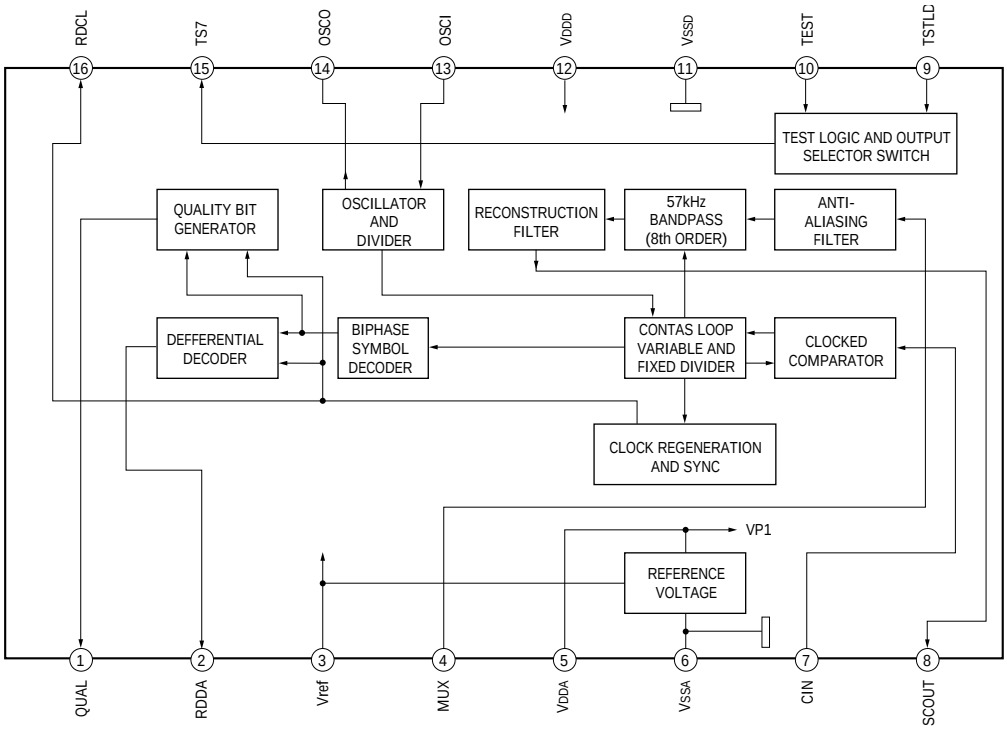


IC51 LC72130



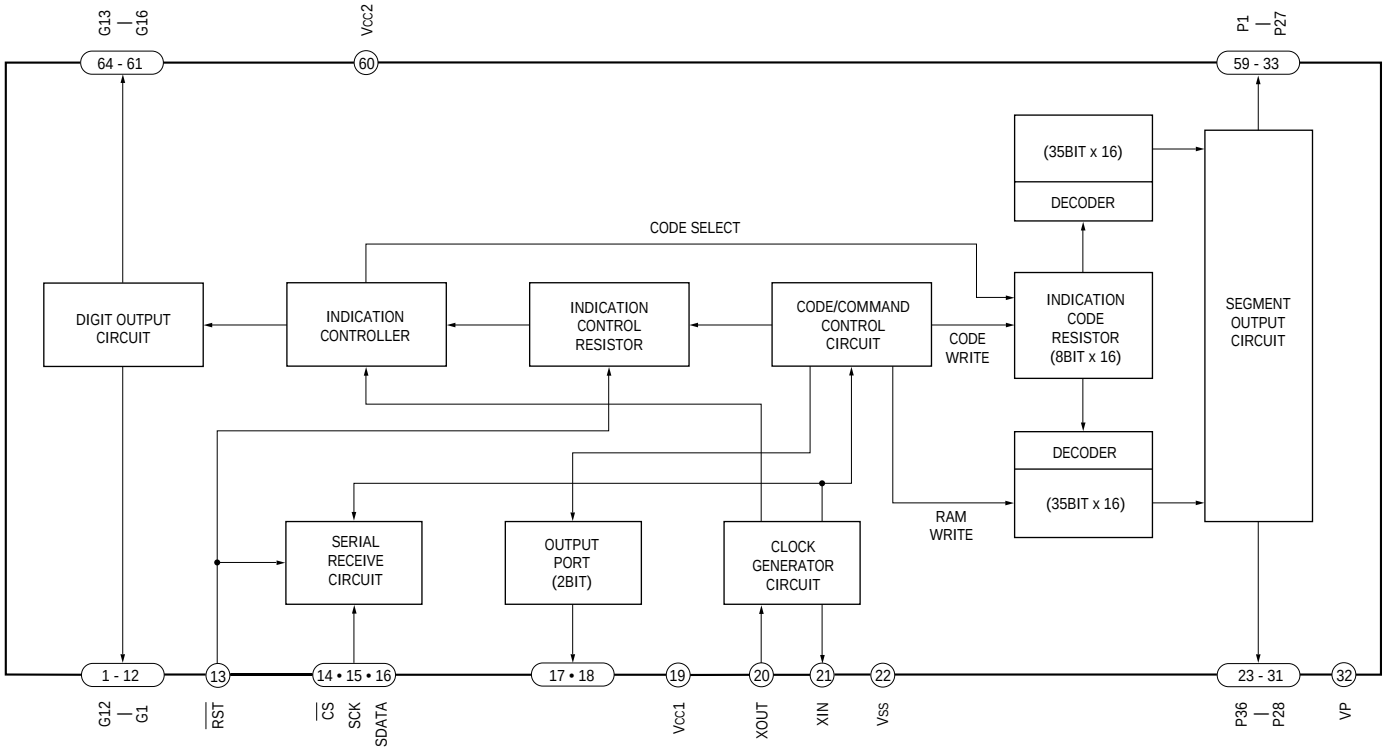
– RDS Board –

IC302 SAA6579 (ST-EX880 ONLY)



– PANEL Board –

IC901 M66004M6FP



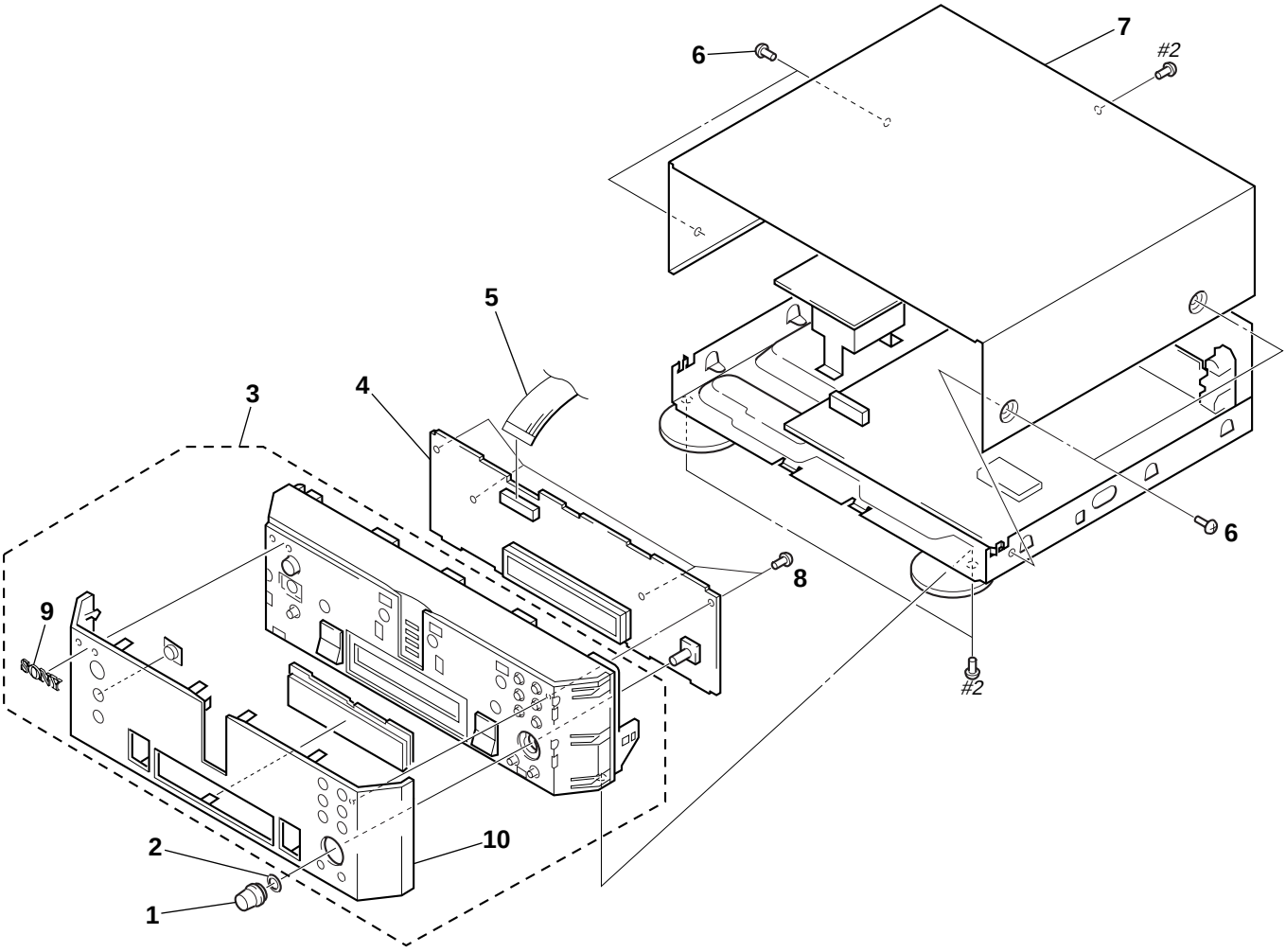
SECTION 6
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  HK : Hong Kong MY : Malaysia
  JE : Tourist SP : Singapore
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of the electrical parts list.

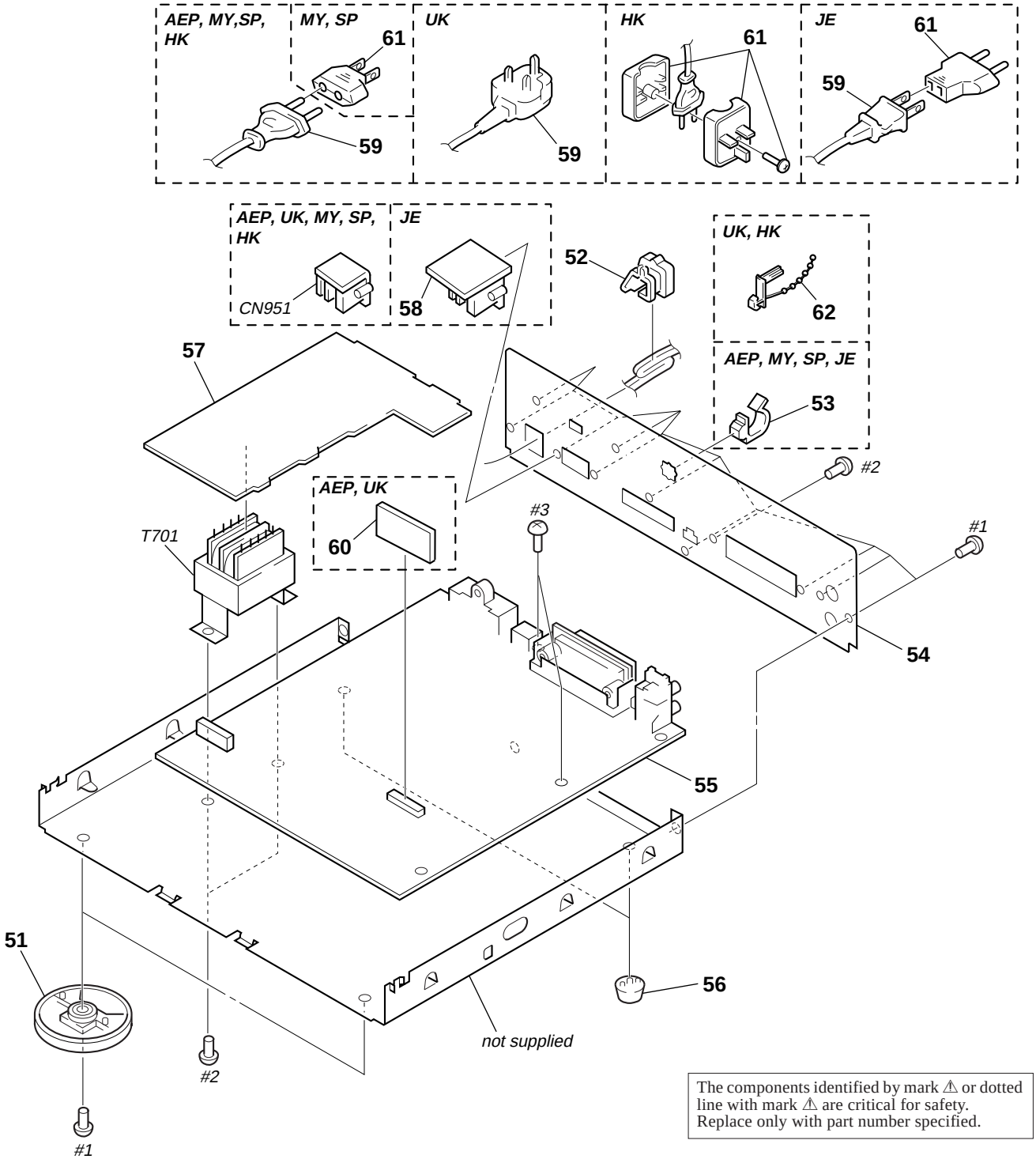
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

(1) CASE, FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	4-995-074-01	KNOB (JOG)	
2	4-988-161-01	SPRING, RING	
3	X-4949-861-1	PANEL ASSY, FRONT (ST-EX880)	
3	X-4949-873-1	PANEL ASSY, FRONT (ST-MS717)	
* 4	A-4407-398-A	PANEL BOARD, COMPLETE (JE)	
* 4	A-4407-880-A	PANEL BOARD, COMPLETE (AEP, UK)	
* 4	A-4407-884-A	PANEL BOARD, COMPLETE (MY, SP, HK)	
5	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)	
6	3-363-099-01	SCREW (CASE 3 TP2)	
* 7	4-900-196-11	CASE	
8	4-951-620-01	SCREW (2.6X8), +BVTP	
9	4-962-708-01	EMBLEM (4-A), SONY	
10	4-995-083-21	PLATE (ST), ORNAMENTAL (ST-EX880)	
10	4-995-083-31	PLATE (ST), ORNAMENTAL (ST-MS717)	

(2) CHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	X-4949-526-1	FOOT (F) ASSY	
52	3-703-244-00	BUSHING (2104), CORD	
* 53	4-949-235-01	HOOK (AEP, MY, SP, JE)	
* 54	4-995-091-11	PANEL (ST), BACK (MY, SP, HK)	
* 54	4-995-091-21	PANEL (ST), BACK (ST-EX880)	
* 54	4-995-091-31	PANEL (ST), BACK (JE)	
* 55	A-4407-399-A	MAIN BOARD, COMPLETE (MY, SP, HK)	
* 55	A-4407-876-A	MAIN BOARD, COMPLETE (AEP, UK)	
* 55	A-4407-885-A	MAIN BOARD, COMPLETE (JE)	
56	4-965-822-01	FOOT	
* 57	1-667-607-11	TRANSFORMER BOARD	
* 58	1-667-608-11	AC OUTLET BOARD (JE)	

Ref. No.	Part No.	Description	Remark
⚠59	1-558-943-41	CORD, POWER (JE)	
⚠59	1-575-651-21	CORD, POWER (AEP, MY, SP, HK)	
⚠59	1-696-571-11	CORD, POWER (UK)	
* 60	A-4407-877-A	RDS BOARD, COMPLETE (AEP, UK)	
⚠61	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
⚠61	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)	
⚠61	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
62	4-956-370-12	BAND, PLUG FIXED (UK, HK)	
⚠CN951	1-526-794-11	OUTLET, AC (EXCEPT JE)	
⚠T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)	
⚠T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)	

SECTION 7
ELECTRICAL PARTS LIST

AC OUTLET | **MAIN**

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	1-667-608-11	AC OUTLET BOARD (JE)			
		**********			
		< CONNECTOR >			
CN951	1-540-039-11	OUTLET, AC (NONPOLAR)(1P)			
		(FOR TA-MS717)(JE)			
**********					
*	A-4407-399-A	MAIN BOARD, COMPLETE (MY, SP, HK)			
*	A-4407-876-A	MAIN BOARD, COMPLETE (AEP, UK)			
*	A-4407-885-A	MAIN BOARD, COMPLETE (JE)			
		**********			
*	4-924-988-11	PLATE (ST), GROUND			
	7-685-871-01	SCREW +BVTT 3X6 (S)			
		< CAPACITOR >			
C1	1-162-306-11	CERAMIC	0.01uF	20%	16V
C2	1-126-967-11	ELECT	47uF	20%	16V
C3	1-162-306-11	CERAMIC	0.01uF	20%	16V
C4	1-164-159-11	CERAMIC	0.1uF		50V
C5	1-162-306-11	CERAMIC	0.01uF	20%	16V
C6	1-162-306-11	CERAMIC	0.01uF	20%	16V
C7	1-126-967-11	ELECT	47uF	20%	16V
C8	1-162-306-11	CERAMIC	0.01uF	20%	16V
C9	1-162-306-11	CERAMIC	0.01uF	20%	16V
C10	1-162-306-11	CERAMIC	0.01uF	20%	16V
C11	1-126-964-11	ELECT	10uF	20%	50V
C12	1-126-959-11	ELECT	0.47uF	20%	50V
C13	1-126-960-11	ELECT	1uF	20%	50V
C14	1-126-960-11	ELECT	1uF	20%	50V
C15	1-126-964-11	ELECT	10uF	20%	50V
C16	1-126-964-11	ELECT	10uF	20%	50V
C17	1-126-964-11	ELECT	10uF	20%	50V
C18	1-126-964-11	ELECT	10uF	20%	50V
C19	1-136-158-00	FILM	0.027uF	5%	50V
C20	1-136-158-00	FILM	0.027uF	5%	50V
C21	1-137-436-11	FILM	0.0039uF	5%	50V
C22	1-137-436-11	FILM	0.0039uF	5%	50V
C23	1-126-960-11	ELECT	1uF	20%	50V
C24	1-162-294-31	CERAMIC	0.001uF	10%	50V
C25	1-162-600-11	CERAMIC	0.0047uF	30%	16V
C26	1-126-967-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description			Remark
C27	1-126-962-11	ELECT	3.3uF	20%	50V
C28	1-162-306-11	CERAMIC	0.01uF	20%	16V
C29	1-126-964-11	ELECT	10uF	20%	50V
C30	1-162-306-11	CERAMIC	0.01uF	20%	16V
C32	1-102-527-11	CERAMIC	82PF	5%	50V
					(ST-EX880)
C33	1-162-306-11	CERAMIC	0.01uF	20%	16V
C35	1-162-306-11	CERAMIC	0.01uF	20%	16V
C36	1-162-306-11	CERAMIC	0.01uF	20%	16V
C37	1-164-159-11	CERAMIC	0.1uF		50V
C38	1-162-198-31	CERAMIC	8.2PF	10%	50V
C40	1-162-306-11	CERAMIC	0.01uF	20%	16V
C41	1-162-306-11	CERAMIC	0.01uF	20%	16V
C43	1-162-294-31	CERAMIC	0.001uF	10%	50V
C44	1-162-306-11	CERAMIC	0.01uF	20%	16V
C45	1-164-159-11	CERAMIC	0.1uF		50V
C47	1-164-095-11	CERAMIC	0.01uF	10%	16V
					(ST-MS717)
C51	1-102-518-11	CERAMIC	33PF	5%	50V
C52	1-102-514-11	CERAMIC	22PF	5%	50V
C53	1-126-964-11	ELECT	10uF	20%	50V
C54	1-162-306-11	CERAMIC	0.01uF	20%	16V
C55	1-104-665-11	ELECT	100uF	20%	10V
C56	1-162-294-31	CERAMIC	0.001uF	10%	50V
C58	1-162-306-11	CERAMIC	0.01uF	20%	16V
C64	1-162-306-11	CERAMIC	0.01uF	20%	16V
C65	1-126-933-11	ELECT	100uF	20%	16V
C67	1-162-306-11	CERAMIC	0.01uF	20%	16V
C71	1-126-961-11	ELECT	2.2uF	20%	50V
C73	1-164-159-11	CERAMIC	0.1uF		50V
C75	1-162-306-11	CERAMIC	0.01uF	20%	16V
C84	1-162-306-11	CERAMIC	0.01uF	20%	16V
C86	1-162-286-31	CERAMIC	220PF	10%	50V
C87	1-136-165-00	FILM	0.1uF	5%	50V
					(ST-MS717)
C87	1-136-169-00	FILM	0.22uF	5%	50V
					(ST-EX880)
C88	1-136-169-00	FILM	0.22uF	5%	50V
C89	1-162-286-31	CERAMIC	220PF	10%	50V
C90	1-162-306-11	CERAMIC	0.01uF	20%	16V
C91	1-162-286-31	CERAMIC	220PF	10%	50V
C93	1-162-286-31	CERAMIC	220PF	10%	50V
C95	1-162-306-11	CERAMIC	0.01uF	20%	16V

MAIN

Ref. No.	Part No.	Description			Remark
C96	1-162-306-11	CERAMIC	0.01uF	20%	16V
C97	1-162-294-31	CERAMIC	0.001uF	10%	50V (ST-EX880)
C98	1-162-294-31	CERAMIC	0.001uF	10%	50V (ST-EX880)
C111	1-126-960-11	ELECT	1uF	20%	50V
C113	1-104-665-11	ELECT	100uF	20%	10V
C124	1-126-967-11	ELECT	47uF	20%	16V
C125	1-126-933-11	ELECT	100uF	20%	16V
C126	1-136-165-00	FILM	0.1uF	5%	50V
C143	1-126-967-11	ELECT	47uF	20%	50V
C144	1-126-948-11	ELECT	100uF	20%	35V
C145	1-126-967-11	ELECT	47uF	20%	50V
C171	1-126-964-11	ELECT	10uF	20%	50V
C181	1-125-705-11	DOUBLE LAYER	0.22F		5.5V
C191	1-126-964-11	ELECT	10uF	20%	50V
C201	1-104-665-11	ELECT	100uF	20%	10V
C203	1-162-306-11	CERAMIC	0.01uF	20%	16V
C204	1-102-953-00	CERAMIC	18PF	5%	50V
C205	1-102-960-00	CERAMIC	24PF	5%	50V
C206	1-162-306-11	CERAMIC	0.01uF	20%	16V
C207	1-162-282-31	CERAMIC	100PF	10%	50V
C208	1-162-294-31	CERAMIC	0.001uF	10%	50V
C209	1-162-306-11	CERAMIC	0.01uF	20%	16V
C210	1-162-306-11	CERAMIC	0.01uF	20%	16V
C211	1-164-159-11	CERAMIC	0.1uF		50V
C212	1-164-159-11	CERAMIC	0.1uF		50V
C213	1-162-306-11	CERAMIC	0.01uF	20%	16V
C214	1-162-306-11	CERAMIC	0.01uF	20%	16V
C215	1-162-282-31	CERAMIC	100PF	10%	50V
C216	1-162-282-31	CERAMIC	100PF	10%	50V
C217	1-162-282-31	CERAMIC	100PF	10%	50V
C218	1-162-282-31	CERAMIC	100PF	10%	50V
C219	1-162-282-31	CERAMIC	100PF	10%	50V
C220	1-162-282-31	CERAMIC	100PF	10%	50V
C221	1-162-282-31	CERAMIC	100PF	10%	50V
C222	1-162-306-11	CERAMIC	0.01uF	20%	16V
C223	1-162-282-31	CERAMIC	100PF	10%	50V
C225	1-162-282-31	CERAMIC	100PF	10%	50V
C226	1-162-282-31	CERAMIC	100PF	10%	50V
C227	1-162-282-31	CERAMIC	100PF	10%	50V
C228	1-162-282-31	CERAMIC	100PF	10%	50V
C229	1-162-282-31	CERAMIC	100PF	10%	50V
C272	1-164-159-11	CERAMIC	0.1uF		50V
C273	1-126-960-11	ELECT	1uF	20%	50V
C274	1-164-159-11	CERAMIC	0.1uF		50V
C281	1-162-282-31	CERAMIC	100PF	10%	50V
C285	1-162-306-11	CERAMIC	0.01uF	20%	16V
C286	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< FILTER >			
CF1	1-579-374-71	FILTER, CERAMIC (ST-EX880)			
CF1	1-567-389-11	FILTER, CERAMIC (ST-MS717)			
CF2	1-579-554-31	FILTER, CERAMIC (ST-EX880)			
CF3	1-567-389-11	FILTER, CERAMIC (ST-MS717)			
CF3	1-579-554-31	FILTER, CERAMIC (ST-EX880)			
CF4	1-527-981-00	FILTER, CERAMIC			
CF5	1-577-091-11	OSCILLATOR, CERAMIC			
CF6	1-577-092-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CN101	1-569-624-11	SOCKET, CONNECTOR 17P (SYSTEM CONTROL)			
CN102	1-568-802-11	SOCKET, CONNECTOR 19P			
* CN103	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)			
CN104	1-770-966-11	PIN, CONNECTOR (PCB)(V TYPE)6P			
* CN105	1-770-723-11	CONNECTOR, BOARD TO BOARD 8P (ST-EX880)			
		< DIODE >			
D1	8-719-911-19	DIODE 1SS119			
D2	8-719-911-19	DIODE 1SS119			
D103	8-719-911-19	DIODE 1SS119			
D104	8-719-911-19	DIODE 1SS119			
D105	8-719-911-19	DIODE 1SS119			
D125	8-719-935-69	DIODE HZS11B1LTA			
D143	8-719-986-64	DIODE HZS30-3LTA			
D161	8-719-069-66	DIODE RD4.7F-T7			
D191	8-719-933-33	DIODE HZS6A1L			
D272	8-719-911-19	DIODE 1SS119			
D281	8-719-911-19	DIODE 1SS119			
D282	8-719-911-19	DIODE 1SS119			
		< GROUND TERMINAL >			
E101	1-537-770-21	TERMINAL BOARD, GROUND			
E103	1-537-770-21	TERMINAL BOARD, GROUND			
		< FERRITE BEAD >			
FB1	1-410-397-21	FERRITE BEAD INDUCTOR (ST-EX880)			
		< FRONTEND >			
FE1	1-233-532-11	ENCAPSULATED COMPONENT (MY, SP, HK)			
FE1	1-233-542-11	ENCAPSULATED COMPONENT (AEP, UK)			
FE1	1-693-251-11	FRONT END (JE)			
FE2	1-233-514-11	ENCAPSULATED COMPONENT (ST-EX880)			
FE2	1-239-634-11	ENCAPSULATED COMPONENT, AM.RF (ST-MS717)			
		< IC >			
IC1	8-759-176-03	IC LA1835			
IC51	8-759-288-54	IC LC72130			
IC111	8-759-158-62	IC TA78057S			
IC171	8-759-165-80	IC PST600C-T			
IC201	8-759-533-78	IC uPD78016FGC-544-AB8			
		< IFT >			
IFT1	1-409-636-11	TRANSFORMER, IF (CERAMIC FILTER)			
		< JACK >			
J101	1-774-822-11	JACK, PIN 2P (TUNER)			
		< COIL >			
L1	1-407-500-00	INDUCTOR 4.7mH (ST-EX880)			
L1	1-410-688-31	INDUCTOR 1.5mH (ST-MS717)			
L3	1-410-470-11	INDUCTOR 10uH			

Ref. No.	Part No.	Description				Remark
L4	1-410-509-11	INDUCTOR	10uH			
L7	1-410-397-21	FERRITE BEAD INDUCTOR				
L10	1-410-470-11	INDUCTOR	10uH (ST-EX880)			
L11	1-410-324-11	INDUCTOR	4.7uH			
L13	1-410-324-11	INDUCTOR	4.7uH			
L108	1-410-397-21	FERRITE BEAD INDUCTOR (ST-EX880)				
L109	1-410-397-21	FERRITE BEAD INDUCTOR (ST-EX880)				
L201	1-408-421-00	INDUCTOR	100uH			
L202	1-408-421-00	INDUCTOR	100uH			
L203	1-410-521-11	INDUCTOR	100uH			
L204	1-410-521-11	INDUCTOR	100uH			
L205	1-410-521-11	INDUCTOR	100uH			
L206	1-410-521-11	INDUCTOR	100uH			
L209	1-410-509-11	INDUCTOR	10uH			
		< FILTER >				
LPF1	1-239-597-11	FILTER, LOW PASS				
LPF2	1-239-597-11	FILTER, LOW PASS				
		< TRANSISTOR >				
Q1	8-729-230-99	TRANSISTOR	2SC2669-OY			
Q2	8-729-230-99	TRANSISTOR	2SC2669-OY			
Q9	8-729-230-99	TRANSISTOR	2SC2669-OY			
Q10	8-729-230-99	TRANSISTOR	2SC2669-OY			
Q11	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)			
Q12	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)			
Q13	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)			
Q14	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)			
Q15	8-729-119-76	TRANSISTOR	2SA1175-HFE (ST-EX880)			
Q55	8-729-422-57	TRANSISTOR	UN4111			
Q121	8-729-202-67	TRANSISTOR	2SK246-GR3			
Q122	8-729-209-15	TRANSISTOR	2SD2012			
Q123	8-729-900-80	TRANSISTOR	DTC114ES			
Q141	8-729-140-97	TRANSISTOR	2SB734-34			
Q142	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q201	8-729-900-80	TRANSISTOR	DTC114ES			
Q202	8-729-118-00	TRANSISTOR	2SB1116-L			
Q203	8-729-422-73	TRANSISTOR	UN4212			
Q273	8-729-422-57	TRANSISTOR	UN4111			
Q274	8-729-900-80	TRANSISTOR	DTC114ES			
Q281	8-729-620-05	TRANSISTOR	2SC2603-EF			
		< RESISTOR >				
R1	1-249-411-11	CARBON	330	5%	1/4W	
R2	1-249-411-11	CARBON	330	5%	1/4W	
R3	1-249-409-11	CARBON	220	5%	1/4W	
⚠R4	1-249-402-11	CARBON	56	5%	1/4W	F
R5	1-249-411-11	CARBON	330	5%	1/4W	
R6	1-249-411-11	CARBON	330	5%	1/4W	
R7	1-249-432-11	CARBON	18K	5%	1/4W	
R8	1-249-432-11	CARBON	18K	5%	1/4W	
R11	1-249-411-11	CARBON	330	5%	1/4W	
R12	1-249-429-11	CARBON	10K	5%	1/4W	
R13	1-249-442-11	CARBON	510	5%	1/4W	
⚠R14	1-249-403-11	CARBON	68	5%	1/4W	F
R15	1-249-411-11	CARBON	330	5%	1/4W	
R16	1-249-425-11	CARBON	4.7K	5%	1/4W	

Ref. No.	Part No.	Description			Remark
R17	1-247-842-11	CARBON	3K	5%	1/4W
R18	1-249-429-11	CARBON	10K	5%	1/4W
R19	1-249-429-11	CARBON	10K	5%	1/4W
R21	1-249-429-11	CARBON	10K	5%	1/4W
R22	1-249-437-11	CARBON	47K	5%	1/4W
R23	1-249-399-11	CARBON	33	5%	1/4W
R24	1-249-425-11	CARBON	4.7K	5%	1/4W (ST-EX880)
R25	1-249-429-11	CARBON	10K	5%	1/4W (ST-EX880)
R28	1-249-432-11	CARBON	18K	5%	1/4W
R29	1-249-411-11	CARBON	330	5%	1/4W
R35	1-249-421-11	CARBON	2.2K	5%	1/4W
R36	1-249-421-11	CARBON	2.2K	5%	1/4W
R37	1-249-411-11	CARBON	330	5%	1/4W
R38	1-249-432-11	CARBON	18K	5%	1/4W
R39	1-249-393-11	CARBON	10	5%	1/4W (ST-EX880)
R39	1-249-401-11	CARBON	47	5%	1/4W (ST-MS717)
R45	1-249-425-11	CARBON	4.7K	5%	1/4W
R46	1-249-425-11	CARBON	4.7K	5%	1/4W
R49	1-249-441-11	CARBON	100K	5%	1/4W
R51	1-249-429-11	CARBON	10K	5%	1/4W
R56	1-249-417-11	CARBON	1K	5%	1/4W
R58	1-249-417-11	CARBON	1K	5%	1/4W
⚠R60	1-249-405-11	CARBON	100	5%	1/4W F
R61	1-247-843-11	CARBON	3.3K	5%	1/4W
R62	1-249-425-11	CARBON	4.7K	5%	1/4W
R63	1-249-425-11	CARBON	4.7K	5%	1/4W
R64	1-249-425-11	CARBON	4.7K	5%	1/4W
R65	1-249-425-11	CARBON	4.7K	5%	1/4W
R70	1-249-425-11	CARBON	4.7K	5%	1/4W (ST-EX880)
R71	1-249-425-11	CARBON	4.7K	5%	1/4W
R72	1-247-807-31	CARBON	100	5%	1/4W
R102	1-249-385-11	CARBON	2.2	5%	1/6W
R103	1-249-385-11	CARBON	2.2	5%	1/6W
R121	1-247-807-31	CARBON	100	5%	1/4W
R141	1-249-429-11	CARBON	10K	5%	1/4W
R142	1-249-441-11	CARBON	100K	5%	1/4W
R143	1-249-397-11	CARBON	22	5%	1/4W
R161	1-249-441-11	CARBON	100K	5%	1/4W
R162	1-249-413-11	CARBON	470	5%	1/4W
R163	1-249-413-11	CARBON	470	5%	1/4W
R171	1-249-417-11	CARBON	1K	5%	1/4W
R181	1-247-807-31	CARBON	100	5%	1/4W
R191	1-249-411-11	CARBON	330	5%	1/4W
R201	1-249-417-11	CARBON	1K	5%	1/4W
R202	1-249-417-11	CARBON	1K	5%	1/4W
R203	1-249-417-11	CARBON	1K	5%	1/4W
R204	1-247-807-31	CARBON	100	5%	1/4W
R205	1-249-409-11	CARBON	220	5%	1/4W
R206	1-249-411-11	CARBON	330	5%	1/4W
R207	1-249-409-11	CARBON	220	5%	1/4W
R208	1-249-409-11	CARBON	220	5%	1/4W
R212	1-247-807-31	CARBON	100	5%	1/4W
R213	1-247-807-31	CARBON	100	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN PANEL

Ref. No.	Part No.	Description			Remark
R214	1-247-807-31	CARBON	100	5%	1/4W
R215	1-247-807-31	CARBON	100	5%	1/4W
R216	1-249-429-11	CARBON	10K	5%	1/4W
R217	1-249-429-11	CARBON	10K	5%	1/4W
R218	1-247-807-31	CARBON	100	5%	1/4W
R219	1-247-807-31	CARBON	100	5%	1/4W
R222	1-247-893-11	CARBON	390K	5%	1/4W
R224	1-249-427-11	CARBON	6.8K	5%	1/4W
R225	1-249-427-11	CARBON	6.8K	5%	1/4W
R226	1-249-427-11	CARBON	6.8K	5%	1/4W
R227	1-249-425-11	CARBON	4.7K	5%	1/4W
R228	1-249-425-11	CARBON	4.7K	5%	1/4W
R229	1-247-807-31	CARBON	100	5%	1/4W
R230	1-247-807-31	CARBON	100	5%	1/4W
R231	1-249-425-11	CARBON	4.7K	5%	1/4W
R232	1-249-425-11	CARBON	4.7K	5%	1/4W
R233	1-249-425-11	CARBON	4.7K	5%	1/4W
R234	1-249-429-11	CARBON	10K	5%	1/4W
R235	1-249-429-11	CARBON	10K	5%	1/4W
R236	1-249-429-11	CARBON	10K	5%	1/4W
R237	1-249-429-11	CARBON	10K	5%	1/4W
R238	1-249-429-11	CARBON	10K	5%	1/4W
R239	1-249-429-11	CARBON	10K	5%	1/4W
R240	1-247-807-31	CARBON	100	5%	1/4W
R241	1-247-807-31	CARBON	100	5%	1/4W
R242	1-247-807-31	CARBON	100	5%	1/4W
R243	1-247-807-31	CARBON	100	5%	1/4W
R244	1-247-807-31	CARBON	100	5%	1/4W
R245	1-247-807-31	CARBON	100	5%	1/4W
R246	1-247-807-31	CARBON	100	5%	1/4W
R247	1-249-393-11	CARBON	10	5%	1/4W
R248	1-247-807-31	CARBON	100	5%	1/4W
R271	1-249-429-11	CARBON	10K	5%	1/4W
R281	1-249-429-11	CARBON	10K	5%	1/4W
R282	1-249-425-11	CARBON	4.7K	5%	1/4W
R283	1-249-393-11	CARBON	10	5%	1/4W
R284	1-249-429-11	CARBON	10K	5%	1/4W
R285	1-249-393-11	CARBON	10	5%	1/4W
R999	1-249-421-11	CARBON	2.2K	5%	1/4W
		< VARIABLE RESISTOR >			
RV1	1-238-601-11	RES, ADJ, CARBON 22.0K			
RV2	1-238-600-11	RES, ADJ, CARBON 10.0K			
		< TERMINAL >			
TM1	1-537-238-21	TERMINAL BOARD (ANTENNA)(ST-MS717)			
TM1	1-537-488-11	TERMINAL BOARD (ANT)(ANTENNA) (ST-EX880)			
		< VIBRATOR >			
X201	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
X202	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			
XT51	1-760-549-31	VIBRATOR, CRYSTAL (4.5MHz)			

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Ref. No.	Part No.	Description			Remark
*	A-4407-398-A	PANEL BOARD, COMPLETE (JE)			
*	A-4407-880-A	PANEL BOARD, COMPLETE (AEP, UK)			
*	A-4407-884-A	PANEL BOARD, COMPLETE (MY, SP, HK)			
		**********			
*	4-995-119-01	HOLDER (FL)			
		< CAPACITOR >			
C901	1-124-584-00	ELECT	100uF	20%	10V
C902	1-164-159-11	CERAMIC	0.1uF		50V
C903	1-124-248-00	ELECT	22uF	20%	35V
C904	1-164-159-11	CERAMIC	0.1uF		50V
C905	1-162-282-31	CERAMIC	100PF	10%	50V
C906	1-162-282-31	CERAMIC	100PF	10%	50V
C907	1-162-282-31	CERAMIC	100PF	10%	50V
C908	1-162-282-31	CERAMIC	100PF	10%	50V
C909	1-162-294-31	CERAMIC	0.001uF	10%	50V
C910	1-162-282-31	CERAMIC	100PF	10%	50V
C911	1-162-282-31	CERAMIC	100PF	10%	50V
C912	1-162-282-31	CERAMIC	100PF	10%	50V
C913	1-162-282-31	CERAMIC	100PF	10%	50V
C914	1-162-282-31	CERAMIC	100PF	10%	50V
C915	1-162-282-31	CERAMIC	100PF	10%	50V
C916	1-162-282-31	CERAMIC	100PF	10%	50V
C917	1-162-282-31	CERAMIC	100PF	10%	50V
C918	1-162-282-31	CERAMIC	100PF	10%	50V
C919	1-162-282-31	CERAMIC	100PF	10%	50V
C920	1-162-282-31	CERAMIC	100PF	10%	50V
C921	1-162-282-31	CERAMIC	100PF	10%	50V
C922	1-162-282-31	CERAMIC	100PF	10%	50V
C923	1-162-294-31	CERAMIC	0.001uF	10%	50V
C924	1-162-282-31	CERAMIC	100PF	10%	50V
C925	1-136-173-00	FILM	0.47uF	5%	50V
C926	1-136-173-00	FILM	0.47uF	5%	50V
C927	1-162-306-11	CERAMIC	0.01uF	20%	16V
C929	1-164-159-11	CERAMIC	0.1uF		50V
C930	1-162-306-11	CERAMIC	0.01uF	20%	16V
C931	1-124-584-00	ELECT	100uF	20%	10V
C932	1-164-159-11	CERAMIC	0.1uF		50V
C933	1-162-306-11	CERAMIC	0.01uF	20%	16V
C934	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN951	1-568-862-11	SOCKET, CONNECTOR 19P			
		< DIODE >			
D902	8-719-046-43	DIODE SEL5421E-TP15 (SLEEP)			
D903	8-719-046-44	DIODE SEL5221S (REC)			
D904	8-719-046-43	DIODE SEL5421E-TP15 (DAILY)			
D905	8-719-046-43	DIODE SEL5421E-TP15 (ONCE)			
		< FLUORESCENT INDICATOR TUBE >			
FL901	1-517-708-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC901	8-759-261-63	IC M66004M6FP			
IC902	8-759-459-83	IC NJL55H400A			

Ref. No.	Part No.	Description			Remark
		< COIL >			
L901	1-408-421-00	INDUCTOR	100uH		
L902	1-408-421-00	INDUCTOR	100uH		
		< RESISTOR >			
R901	1-249-417-11	CARBON	1K	5%	1/4W
R902	1-249-418-11	CARBON	1.2K	5%	1/4W
R903	1-249-420-11	CARBON	1.8K	5%	1/4W
R904	1-249-422-11	CARBON	2.7K	5%	1/4W
R905	1-249-425-11	CARBON	4.7K	5%	1/4W
R906	1-249-417-11	CARBON	1K	5%	1/4W
R907	1-249-418-11	CARBON	1.2K	5%	1/4W
R908	1-249-420-11	CARBON	1.8K	5%	1/4W
R909	1-249-422-11	CARBON	2.7K	5%	1/4W
R910	1-249-425-11	CARBON	4.7K	5%	1/4W
R911	1-249-429-11	CARBON	10K	5%	1/4W
R916	1-247-807-31	CARBON	100	5%	1/4W
R920	1-247-807-31	CARBON	100	5%	1/4W
R921	1-249-417-11	CARBON	1K	5%	1/4W
R922	1-249-417-11	CARBON	1K	5%	1/4W
R923	1-249-417-11	CARBON	1K	5%	1/4W
R924	1-249-434-11	CARBON	27K	5%	1/4W
R925	1-249-429-11	CARBON	10K	5%	1/4W
R926	1-249-441-11	CARBON	100K	5%	1/4W
		< SWITCH >			
S901	1-762-875-21	SWITCH, KEYBOARD (STEREO/MONO)			
S902	1-762-875-21	SWITCH, KEYBOARD (BAND)			
S903	1-762-875-21	SWITCH, KEYBOARD (PRESET)			
S904	1-762-875-21	SWITCH, KEYBOARD (MANUAL ←)			
S905	1-762-875-21	SWITCH, KEYBOARD (AUTO →)			
S906	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)			
S907	1-762-875-21	SWITCH, KEYBOARD (ONCE)			
S908	1-762-875-21	SWITCH, KEYBOARD (DAILY)			
S909	1-762-875-21	SWITCH, KEYBOARD (REC)			
S910	1-762-875-21	SWITCH, KEYBOARD (SLEEP)			
S911	1-762-875-21	SWITCH, KEYBOARD (CLOCK/TIMER SET)			
S912	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)			
S913	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S914	1-762-875-21	SWITCH, KEYBOARD (I/⏻)			
S915	1-475-421-11	ENCODER, ROTARY (MULTI CONTROLLER)			
**********					
*	A-4407-877-A	RDS BOARD, COMPLETE (AEP, UK)			
		**********			
		< CAPACITOR >			
C301	1-164-159-11	CERAMIC	0.1uF		50V
C302	1-162-288-31	CERAMIC	330PF	10%	50V
C303	1-162-306-11	CERAMIC	0.01uF	20%	16V
C304	1-126-964-11	ELECT	10uF	20%	50V
C305	1-126-967-11	ELECT	47uF	20%	16V
C306	1-136-177-00	FILM	1uF	5%	50V
C307	1-162-306-11	CERAMIC	0.01uF	20%	16V
C308	1-126-967-11	ELECT	47uF	20%	16V
C309	1-136-177-00	FILM	1uF	5%	50V
C310	1-162-306-11	CERAMIC	0.01uF	20%	16V
C311	1-126-961-11	ELECT	2.2uF	20%	50V
C312	1-162-294-31	CERAMIC	0.001uF	10%	50V
C313	1-101-884-00	CERAMIC	56PF	5%	50V
C314	1-101-884-00	CERAMIC	56PF	5%	50V
C315	1-126-967-11	ELECT	47uF	20%	16V
C317	1-162-282-31	CERAMIC	100PF	10%	50V
C318	1-162-282-31	CERAMIC	100PF	10%	50V
		< CONNECTOR >			
* CN301	1-778-770-11	CONNECTOR, BOARD TO BOARD (PLUG)			
		< DIODE >			
D102	8-719-911-19	DIODE 1SS119			
D301	8-719-911-19	DIODE 1SS119			
		< IC >			
IC301	8-759-634-51	IC M5218AP			
IC302	8-759-169-99	IC SAA6579			
		< COIL >			
L301	1-410-521-11	INDUCTOR	100uH		
L302	1-410-521-11	INDUCTOR	100uH		
		< RESISTOR >			
R301	1-249-441-11	CARBON	100K	5%	1/4W
R302	1-249-441-11	CARBON	100K	5%	1/4W
R303	1-249-441-11	CARBON	100K	5%	1/4W
R304	1-249-441-11	CARBON	100K	5%	1/4W
R305	1-249-429-11	CARBON	10K	5%	1/4W
R306	1-249-426-11	CARBON	5.6K	5%	1/4W
R308	1-249-417-11	CARBON	1K	5%	1/4W
		< VIBRATOR >			
X301	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)			
**********					
*	1-667-607-11	TRANSFORMER BOARD			
		**********			
	1-533-293-11	FUSE HOLDER			
		< CAPACITOR >			
C701	1-126-952-11	ELECT	1000uF	20%	35V
C702	1-128-576-11	ELECT	100uF	20%	63V
C703	1-126-968-11	ELECT	100uF	20%	50V
⚠C704	1-113-924-11	CERAMIC	0.0047uF	20%	250V
C709	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< CONNECTOR >			
CN702	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN703	1-564-321-00	PIN, CONNECTOR 2P			
		< DIODE >			
D701	8-719-200-82	DIODE 11ES2			
D702	8-719-200-82	DIODE 11ES2			
D703	8-719-200-82	DIODE 11ES2			
D704	8-719-200-82	DIODE 11ES2			
D705	8-719-911-19	DIODE 1SS119			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

TRANSFORMER

Ref. No.	Part No.	Description			Remark
		< FUSE >			
⚠F701	1-532-505-51	FUSE (T5.0AL/250V)			
		< TRANSISTOR >			
Q701	8-729-119-78	TRANSISTOR 2SC403SP-51			
		< RESISTOR >			
R701	1-260-088-11	CARBON	120	5%	1/2W
R702	1-249-429-11	CARBON	10K	5%	1/4W
R703	1-249-425-11	CARBON	4.7K	5%	1/4W
		< RELAY >			
⚠RY701	1-755-127-11	RELAY			
		< SWITCH >			
⚠S701	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (ST-MS717)			
		< TRANSFORMER >			
⚠T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)			
⚠T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)			

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		MISCELLANEOUS			
		**********			
5	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)			
⚠59	1-558-943-41	CORD, POWER (JE)			
⚠59	1-575-651-21	CORD, POWER (AEP, MY, SP, HK)			
⚠59	1-696-571-11	CORD, POWER (UK)			
⚠61	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)			
⚠61	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)			
⚠61	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)			
⚠CN951	1-526-794-11	OUTLET, AC (EXCEPT JE)			
⚠T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)			
⚠T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)			

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		HARDWARE LIST			
		**********			
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S			
#2	7-685-871-01	SCREW +BVTT 3X6 (S)			
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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